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How existing rail lines can be used in **rapid-transit** systems . . . . . p. 25

December 2, 1963

RAILWAY AGE WEEKLY

How weight affects rails p. 11

"Perfect cars" pay off p. 12

ACL plans system-wide EDP p. 15

How GN tamps turnouts p. 18

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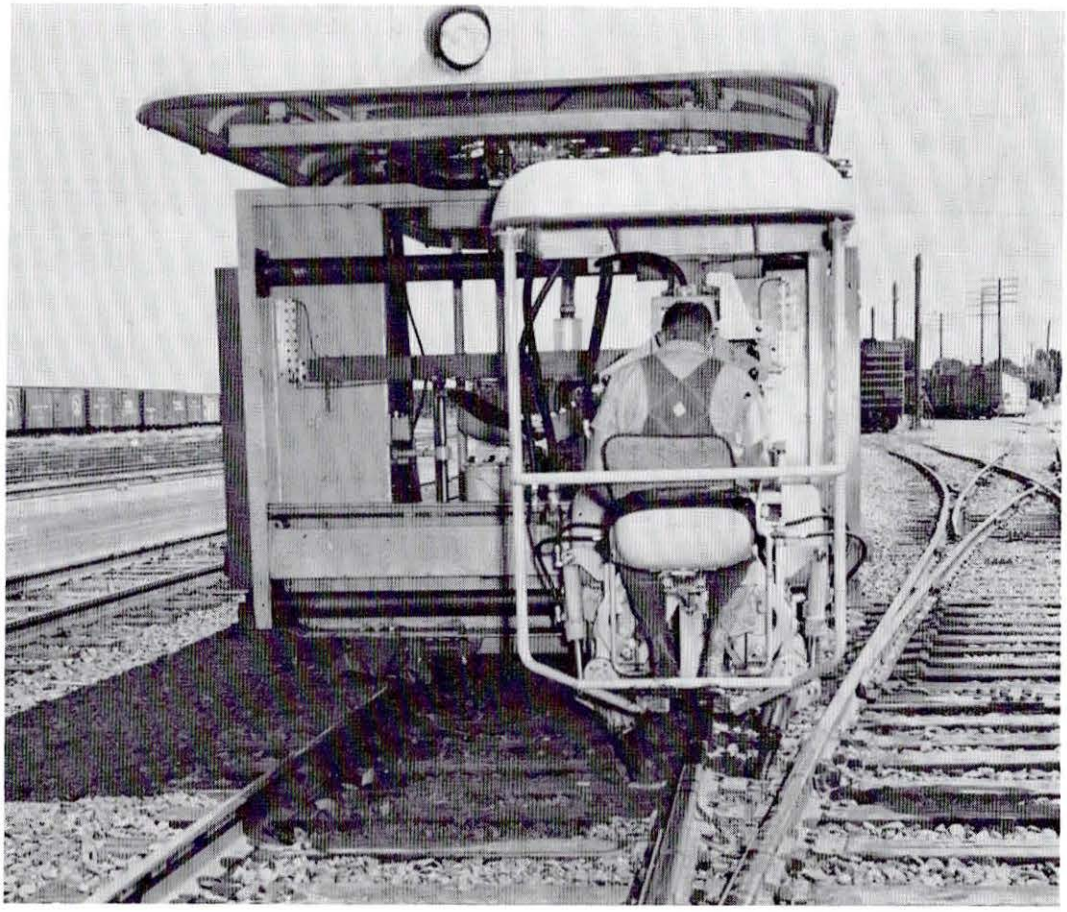
60 cents: A Simmons-Boardman TIME-SAVER Publication

PLASSER WE-75 SWITCH-SPOT TAMPER

Makes available the proven vibratory-squeeze principle for tamping through switches, frogs and crossings. Gives uniform ballast compaction at practically all points in turnouts.



NOTE THESE SPECIAL FEATURES:

- *Four-tool tamping head, along with operator's seat and all controls, mounted on carriage with full lateral travel.*
- *All four tools may be operated either as a unit or individually.*
- *To clear adjacent rails any or all tamping tools can be tilted upward at an angle of 85 deg.*
- *Available with hydraulic jacks and levelling device for spot tamping.*

WANT PROVEN FEATURES? The WE-75 has them! This machine incorporates these proven features of Plasser production tampers: Prompt adjustment of squeeze pressure and vertical pressure on tamping head to suit any ballast condition; maximum squeeze pressure available for instant use; depth of tamping adjustable immediately; hydraulic turntable for quick turn-around or set-off.

WANT VERSATILITY? The WE-75 has it! Example: The ability to tilt the tamping tools outward singly or in pairs, and to move the tamping carriage laterally, makes it possible to tamp ties practically anywhere in a turnout, including underneath the frog.

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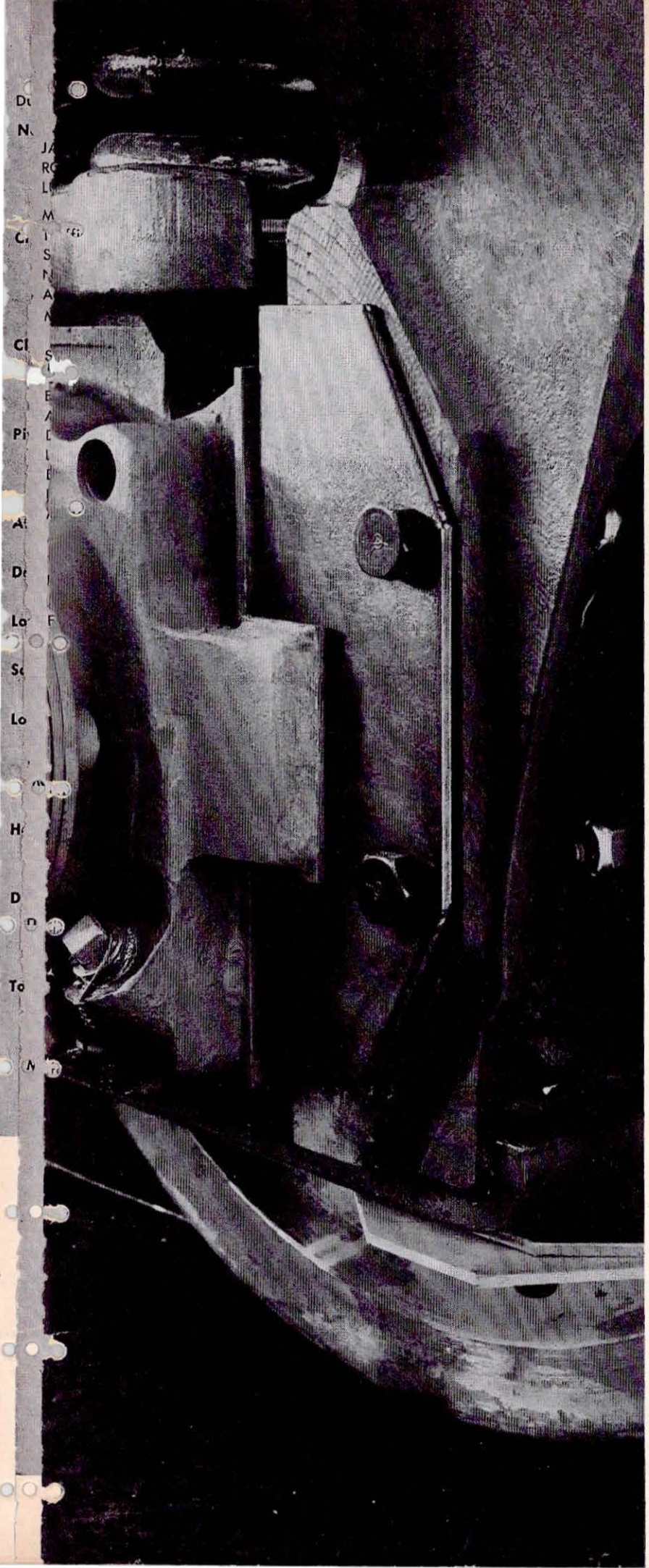
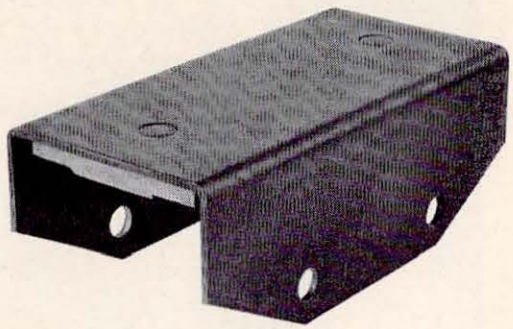


Electro-Motive Parts MAKE the Diesel Locomotive



New manganese pedestal liner will last up to 2½ times longer

That's why we specify it as original equipment on our new GP-35 locomotive (photo at left).

In a 135,000 mile road test, the new manganese liner proved it has 248% greater resistance to wear than the conventional carbon steel liner.

How can the manganese liner be that much better? Because the Hadfield manganese steel we put into it actually toughens up under continuous impact loading.

The new manganese pedestal liner helps to reduce maintenance on our newest model locomotives. It can do the same for your earlier model units. Liner change-outs will be less frequent, reducing replacement parts and labor costs.

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The global business magazine of transportation

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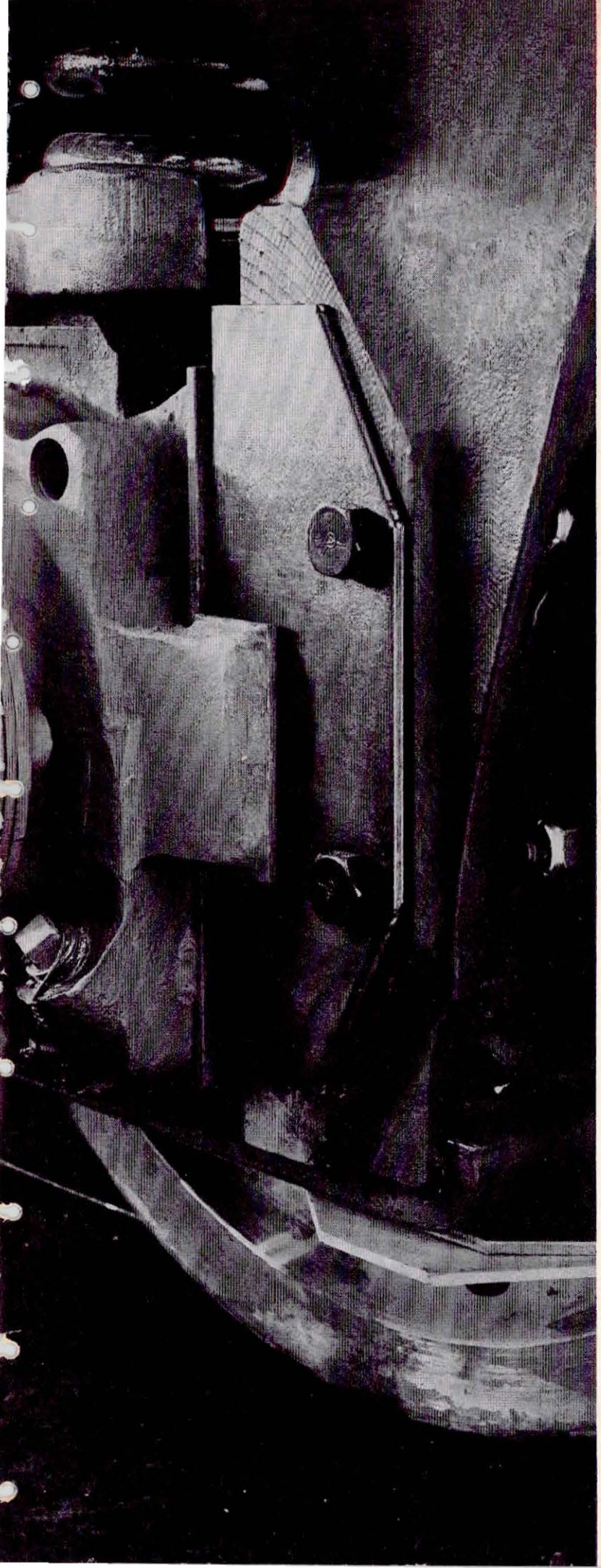

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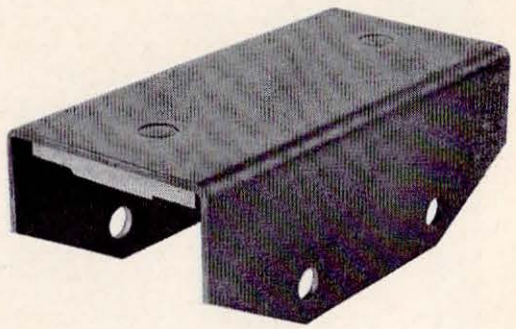

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A city is in danger of becoming obsolete when it is overwhelmed by the problem of getting people in and out of town, people who are essential to support a balanced community of working facilities, retail stores, and places of entertainment. Most of the smart, big cities are now examining transportation systems on private rights-of-way as the fastest, cheapest, safest, most comfortable way to move people. And since modern transportation means modern *control*, the WABCO Mass Transit Center has been established to help transportation planners keep abreast of the newest developments in moving people.

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RAILWAY AGE WEEK AT A GLANCE

December 2, 1963 • Vol. 155, No. 22

Firemen: Down but not out

Railroad management has won the biggest round yet in its fight to eliminate firemen from freight and yard diesels—but the unions refuse to call it quits. ..... **p. 9**

Heavy cars may cut rail, wheel life

A complete engineering investigation is needed to determine the effects of today's heavy freight cars on rail, wheel and axle life, according to an ASME panel discussion..... **p.11**

'Perfect' box cars pay off

A $200,000 test of five specially-equipped box cars indicates that a combination of cushion underframe and interior damage-prevention devices is a worthwhile investment..... ..... **p.12**

System-wide EDP on tap for ACL

Coast Line's new system concept of data processing will provide railroad operating and management control such as has never before been possible, says ACL President Rice.. **p.15**

GN tamps turnouts fast

The Great Northern, using specially-designed machines, has begun a program for out-of-face tamping of turnouts on its Minneapolis-Seattle main line **p.18**

Edmonton eyes rail transit proposal

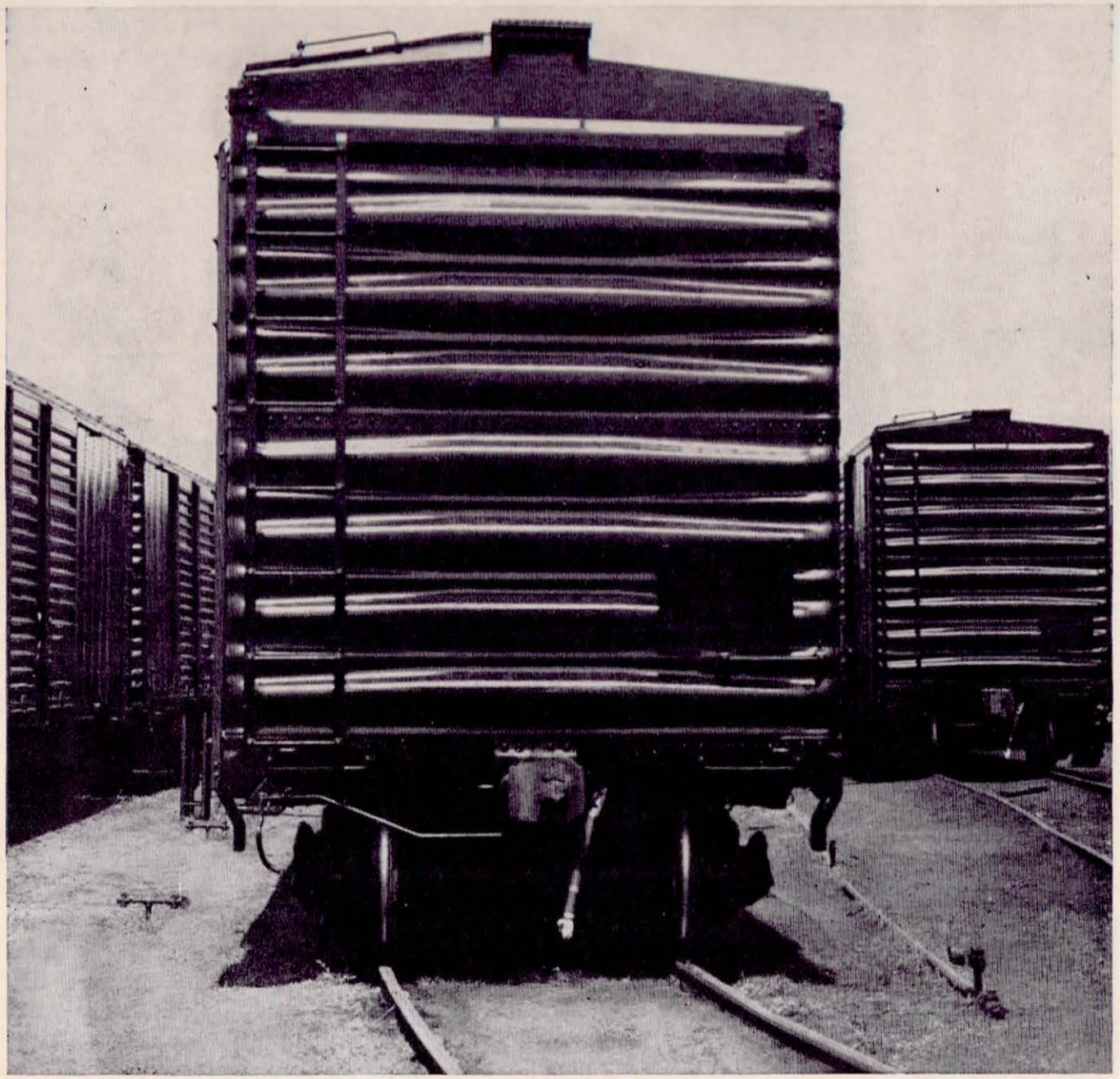
Hopes are high among city planners that work may begin by 1968 on a 25-mile, $100-million subway, surface and elevated mass-transit system..... **p.24**

How rail lines can handle rapid transit:

With changes in the signal system, contends a New York Central engineer, rapid transit operations may be mixed with standard railroad operations **p.25**

The Action Page—JFK's legacy to transport

An appropriate memorial to the late President Kennedy would be enactment of his far-sighted program to eliminate inequities in this country's transportation system..... **p.38**



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RAILWAY AGE WEEK AT A GLANCE

Short and Significant

Net income of Class I Railroads . . .

for this year's first nine months was $426 million, up $113 million from last year's $313 million. The third-quarter net was up $25 million—from $131 million to $156 million.

Creation of a special new AAR group . . .

to deal with cybernetics and automation is under consideration. The new group, in time, may become a full-fledged division of the association.

Jumbo box cars for Ford auto-parts . . .

are being ordered by 10 railroads. Slated for March 1, 1964 delivery are 193 of the 85-foot cars. A total of 800 of the cars will be delivered by August, 2,300 within three years.

The Rock Island-Union Pacific merger . . .

was approved Nov. 22 by UP stockholders. Voted in favor of the proposal were 84% of UP common shares and 80% of preferred shares. Court proceedings have delayed the RI vote.

General American and Buckeye Pipe Line . . .

have abandoned plans for a merger, reportedly because of Buckeye stockholder opposition. Buckeye shareholders were to have received 0.43 share of GATC for each Buckeye share.

A $5 million transportation center . . .

that would combine rail, helicopter, bus and automobile facilities, is planned for Garden City, Long Island, N.Y., according to a spokesman for Webb & Knapp, Inc., development firm.

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Current Statistics

Operating revenue	
6 mos., 1963	4,714,888,444
6 mos., 1962	4,703,908,621
Operating expenses	
6 mos., 1963	3,683,992,541
6 mos., 1962	3,712,959,223
Taxes	
6 mos., 1963	464,644,151
6 mos., 1962	523,652,505
Net railway operating income	
6 mos., 1963	359,753,801
6 mos., 1962	275,271,282
Net income, estimated	
6 mos., 1963	270,000,000
6 mos., 1962	181,000,000

Carloadings revenue freight	
46 wks., 1963	25,841,087
46 wks., 1962	25,766,556
Freight cars on order	
Nov. 1, 1963	22,196
Nov. 1, 1962	12,159
Freight cars delivered	
10 mos., 1963	36,616
10 mos., 1962	32,451
Serviceable cars	
Oct. 1, 1963	1,409,980
Oct. 1, 1962	1,435,250
Cars awaiting repairs	
Oct. 1, 1963	117,177
Oct. 1, 1962	131,615

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COURT FIGHT LOOMS

Firemen: down but not out

An arbitration award providing for gradual elimination of 90% of the jobs of firemen on road-freight and yard diesels will be fought in court by the unions—despite the fact that it provides liberal protection for present employees. A union strategy meeting is scheduled this week in Washington.

Eventual elimination of 90% of the diesel-firemen jobs in road freight and yard service will result if the arbitration award in the featherbedding case withstands the court test planned by interested unions. On the other issue before it—crew consist—the arbitration board made an award which sets up procedures for final settlement of management or union demands that some present arrangements be modified.

As required by the law under which it was created in the face of last August's strike threat, the seven-member arbitration board filed its award Nov. 26 in the U. S. District Court for the District of Columbia. Chairman of the board was Ralph T. Seward, and its two other public members were James J. Healy and Benjamin Aaron.

Railroad management was represented by J. E. Wolfe, chairman, National Railway Labor Conference, and Guy Knight, vice president, labor relations, Pennsylvania. Union representatives were H. E. Gilbert, president, Brotherhood of Locomotive Firemen & Enginemen, and R. H. McDonald, vice president, Brotherhood of Railroad Trainmen.

● **Unions call parley.** The railroad representatives joined the public members in signing the award, although they made a statement saying they were "disappointed with certain of its provisions." Separate dissenting opinions came from Mr. Gilbert and Mr. McDonald, and the former announced that the BLF&E and Brotherhood of Locomotive Engineers planned to go to court. Asked if unions he represented (Order of Railway Conductors and Brakemen and Switchmen's Union of North America as well as BRT), would also go to court, Mr. McDonald replied that their decision would be made at a Washington meeting of all interested unions scheduled for Monday of this week. There seemed little doubt as to what that decision would be in view of President Charles Luna's recent announcement that BRT was seriously considering challenging the constitutionality of the arbitration law.

The BLF&E-BLE appeal raises the issue of constitutionality and will also challenge the validity of the award, Mr. Gilbert said. "After having served as a fireman and engineer," he added, "it is difficult for me to understand the award. I don't think they followed the law."

● **What the court could do.** The law authorizes court tests in a provision saying that the arbitration award shall be subject to Section 9 of the Railway Labor Act. That provides that, within 10 days after the filing of an award, either party may petition to "impeach" it on grounds that it does not conform to requirements of the Railway Labor Act, that it does not conform to the arbitration agreement (in this case the arbitration law), that a member of the arbitration board was guilty of fraud or corruption.

The court may not get into the merits of the controversy, and it may not invalidate an award because of uncertainty. In the latter situation, it can only reconvene the arbitration board and ask for clarification.

Unless the arbitration law's timetable is upset by the courts, the award will become effective Jan. 25, 1964, and remain in effect two years. What the legal situation will then become is anybody's guess. No member of the board had an answer at the two-hour briefing they held for Washington correspondents. Mr. Gilbert did say, however, that if two years doesn't bring agreement on arrangements different from those contemplated by the award, the BLF&E "will be insisting that present rules be reinstated."

● **Carrier savings uncertain.** Because of the liberal severance arrangements proposed in connection with the award, there was no estimate as to immediate savings to the carriers. Because of the "many variables, it is impossible to guess until the award is in effect," Mr. Wolfe said. Full benefits of the firemen-off award won't come for some 8 or 10 years, that being the time it will take for all severance arrangements to run their course.

As to this firemen-off issue, the award provides that, within a week following its effective date, management shall have the right to give each local chairman of unions representing firemen in each seniority district two lists—one listing the pool and regularly-assigned road freight engine crews, and the other listing regularly assigned yard engine crews. Within 30 days after the receipt of these lists, after conferences between the parties, each local chairman shall have the right to designate 10% of the listed crews as those to which a fireman must be assigned.

After the expiration of this 37 days, the carrier shall not be required to use firemen on other than steam power in road freight or yard service, other than in crews designated by the local chairmen—except as may be necessary to provide jobs for firemen whose employment rights are retained as provided in the award.

● **Protection for firemen.** As to procedures for eliminating jobs as these attrition arrangements permit, the award provides:

Firemen with 10 or more years seniority (about 65% of the 40,000 in service) shall retain their rights to engine service assignments as provided by rules presently in effect.

Firemen with less than 10 years seniority (with exceptions noted below) shall also retain their present rights, unless and until offered another comparable job by the carrier. The offer of

WATCHING WASHINGTON WITH WALTER TAFT

TAFT

● **PROSPECTS** for continued White House support of the late President John F. Kennedy's Transportation Program, which is also the railroad industry's program, will remain uncertain until President Lyndon B. Johnson spells out the policies of his Administration in some detail. The new President is naturally expected to embrace and maintain, initially at least, the basic policies of his predecessor. That expectation, however, applies only to foreign policy and the domestic programs to which the Kennedy Administration gave top priority. The latter never included the Transportation Program. They were, principally, Mr. Kennedy's calls for legislation to provide business-incentive tax reduction, insure equal civil rights for all citizens, and expand the Social Security Program to include arrangements for medical care to the aged.

THE PRESIDENT'S DEATH deprived the railroad industry of the best friend it has had in the White House in recent times. While transportation studies making what the industry considered sound recommendations were sponsored by Presidents Eisenhower, Truman and Roosevelt, none of these Kennedy predecessors went as far as he did in making such recommendations his own. They merely sent them to Congress with more-or-less noncommittal letters of transmittal.

MR. KENNEDY, on the other hand, used such staff reports to frame his own program which he submitted to Congress in his Transportation Message of April 5, 1962. And he followed through with drafts of bills designed to implement the program.

THESE ORIGINAL BILLS died with the *sine die* adjournment of that Eighty-seventh Congress, but Mr. Kennedy resubmitted them this year to the new Congress, with supporting letters of transmittal to the Speaker of the House and President Johnson in his former role as vice president and presiding officer of the Senate. Meanwhile, the late President had made three earlier 1963 requests for favorable consideration of the program—in his State-of-the-Union and Budget messages and in his Annual Economic Report.

THERE WAS DISAPPOINTMENT, of course, when Mr. Kennedy did not have the White House staff follow through with lobbying activities for the program. That disappointment reflects a criticism of the late President which charges, as one observer put it, that he was "endowed with a love of ideas," and "tended to send brilliant messages to Congress on bills but to let matters rest there." It remains true, nevertheless, that he did more than his immediate predecessors to promote sound transport legislation.

REGARDLESS of what President Johnson does, the program which Mr. Kennedy advanced is not expected to die. Its major recommendations were railroad-industry proposals long before the late President endorsed them.

THESE TOP ITEMS include the minimum-rate proposal to equalize competitive conditions as to transportation of commodities in bulk and agricultural products, the proposed extension of the Interstate Commerce Act's reparations provisions to truckers and freight forwarders, and the imposition of adequate user charges on publicly-provided transport facilities. No action is expected this year, but the "Kennedy Bills" will remain alive for another year, since it is the same Congress that will return for the 1964 session.

another job carries with it guaranteed annual earnings, for a period not exceeding five years, equal to the total compensation received by such employees as firemen.

The exceptions to this general less-than-10-years-seniority rule are these:

Firemen hired on or after a date two years prior to the effective date of the award may be dropped, but will be entitled to a lump-sum separation allowance to be determined from provisions of the Washington Job Protection Agreement, a labor-management pact entered in 1936 to protect employees adversely affected by mergers or coordination projects.

Firemen hired prior to a date two years before the effective date of the award, and whose average monthly earnings have not exceeded $200 during the two years preceding the effective date of the award, may also be dropped with a severance allowance equal to 100% of what they have earned during those two years.

Firemen hired prior to a date two years prior to the effective date of the award, who have not performed service as an engineer or fireman during the two years, may be dropped without a severance allowance.

● **New national study.** To provide for continuing study of road freight and yard service, with and without firemen, the award requires establishment of a national joint board, consisting of two representatives of management and two representatives of the engine-service brotherhoods. "During the 3-month period before the date this award is due to expire," the board will be required to prepare and issue to the parties a report based on its study.

Procedures for settling the crew-consist issue provide first for its remand to individual roads for negotiation with benefit of scope rules and guidelines. The former permit full review of crew consists of branch line trains and yard jobs, and of main-line crews which consist of more or less than two trainmen. The procedure for review is as follows:

Either party may by written notice propose changes in the size of crews within the foregoing classes. If no agreement results from negotiation, either party may refer the issue to a special three-man board of adjustment, composed of one member named by each of the parties and a neutral service as chairman. A majority decision of such a board will be binding.

● **Crew-consist guidelines.** More than 20 guidelines call upon such boards to consider such things as safety, avoidance of undue burden or workload on members of the crew, physical characteristics of the line, availability

(*Continued on page 33*)

ASME PANEL SAYS . . .

Heavy cars may cut rail, wheel life

Higher-capacity freight cars can immediately swell revenues and net; still to be appraised are the long-term effects on rails, axles and wheels, with greater maintenance costs a possibility.

Heavier freight cars and what they can mean in higher rail stresses—and in greater stresses in wheels and axles as well—were the subject of a panel discussion at the recent annual meeting of the American Society of Mechanical Engineers in Philadelphia. Railroad and steel industry engineers showed that there is no unanimity of opinion on just exactly what heavy cars mean in terms of reduced rail, wheel and axle life. There was agreement, however, that the situation is ripe for a complete engineering investigation.

● **High cost of procrastination.** What is needed is good documentation, supported by real scientific investigations, according to E. Wynne, vice president of Canadian National's Great Lakes Region, who served as moderator. "If we sit back and do nothing, the industry could pay an extremely high price in years to come," he warned. "We need to know if we need bigger wheels, harder wheels, harder rails, or some other approach to this problem."

Previously Mr. Wynne said that there seems to be general agreement that heavier loading of 70-ton and higher capacity cars does increase wheel and rail shelling. Just how much, and whether higher replacement costs are offset by greater revenues is unresolved.

Panel members were: O. J. Horger, chief engineer, Railway Division, Timken Roller Bearing Co. (axles); A. M. Johnsen, supervising research metallurgist, Armco Steel Corp. (wheels); G. P. McGavock, mechanical engineer, Norfolk & Western (center plates); and R. B. Stampfle, metallurgical engineer, Bethlehem Steel Co. (rails).

● **'Fatigue' problem.** "The theoretical contact area between wheel and rail is a small ellipse which probably varies considerably with the amount and type of wear on the wheel and rail, and also with the lateral position of the wheel relative to the rail," Mr. Stampfle explained. "The metal in the contact area of both wheel and rail is working above the elastic limit of the steel and plastic deformation and work hardening of the metal are taking place. Apparently enough plastic deformation takes place to increase the contact area and prevent further deformation. The plastic deformation apparently increases with the passage of each wheel, so the problem of fatigue arises. This is a unique situation where the metal is working above the elastic limit with repeated loading—and most engineers would say that the material would fail in a relatively short time. Surprisingly, wheels and rails do not fail rapidly, although some shelling is found in both, particularly in heavy duty service."

More of the big cars

Over the past 30 months almost 25% of the cars ordered have been of 85- to 100-ton capacity. While these cars are serving to maintain or increase the railroads' share of the transportation market, they must be operated over tracks and structures usually in existence long before they were ordered, or even conceived. Along with this new equipment, track engineers must also contend with the 5% increase in allowable gross weight of practically all existing cars in interchange service which was authorized by the AAR over a year ago (RA, July 2, 1962, page 28).

● **Two major rail problems.** Rail engineers, in deciding whether track structures are adequate to carry these cars, must consider two primary problems, according to Mr. Stampfle:

● If rails have sufficient section modulus to keep bending stresses low enough to prevent excessive rail failures;

● Whether wheel rail contact stresses are low enough to prevent excessive plastic flow of rail-head metal and resulting crushed heads and shelly failures, particularly on curves.

● **Reducing shelling.** Contact pressure between rail and wheel is rated by Mr. Stampfle as the most important problem to be considered in conjunction with heavy cars. "In fact," he pointed out, "shelling in rails due to high contact stresses was already with us on heavy tonnage tracks carrying 70-ton cars with maximum static wheel loads of 26,250 pounds on 33-inch diameter wheels. Shelly spots develop sooner on the high, or outside rail on curves, but they will also develop on tangent track with sufficient time and tonnage. The shell, in itself, is not considered detrimental, except that in a very small percentage of them a transverse fracture starts to develop, and with flexing, the rail is soon broken completely.

Mr. Stampfle suggested four ways to reduce rail shelling:

● Limit wheel loads in proportion to wheel diameter.

● Utilize high-strength steels in rails.

● Modification of rail-head contours to approach the contour of the average worn car wheel.

● Lubrication of rails on curves.

M. S. Riegel, consulting engineer for the American Iron and Steel Institute, said that it is important to increase the wheel-rail contact area. Changes in tread and flange contours should be considered in order to give more "intimate" wheel-rail contact. "After all," Mr. Reigel said, "all the rail is down—wheels are what should be altered."

Heavier cars will importantly affect track joints, D. H. Shoemaker, chief engineer of the Northern Pacific, warned. He said that railroads can look forward to more joint tamping, more rail-end welding and more joint bar work. He said that unless the proper decisions are made concerning heavy cars, the Northern Pacific could be confronted with premature replacement of 200 miles of main-line rail annually.

● **Heat-treated rail.** With the rate, traffic and operating benefits of heavier equipment, the higher first cost of heat-treated rail can be justified, according to B. M. Monaghan, chief engineer, Quebec, North Shore & Labrador. He urged that there be a scientific investigation and solution to the rail-shelling problem rather than the expedient of merely limiting wheel loading. He said that it is important to relate experience to theory and then reproduce the phenomena under controlled conditions. Another speaker said that overall limits must not be placed on car weights based on what he termed "isolated" rail damage.

Rail damage, even by 70-ton cars, has been more than "isolated," according to C. J. Code, assistant chief engineer, staff, Pennsylvania. He said that studies by the PRR and Battelle Memorial Institute have shown that the only possible solutions are stronger rail steels or reduced wheel loads. "In 15 to 20 years we can be having such rail damage that we can't live with it unless larger wheels or more wheels are mandatory," Mr. Code stated. He asked for observance of "sensible engineering principles."

'Perfect' box cars pay off

A year-long, $200,000 test of five specially equipped box cars indicates that a combination of cushion underframe and interior damage-prevention devices is a worthwhile investment.

Can box cars, made as perfect as possible to eliminate damage, pay their way? Is the combination of cushion underframe and interior damage-prevention devices worthwhile as an investment?

Evans Products Co. put $200,000 toward tests to produce answers to these questions. After a year, in which Evans has had five so-called perfect box cars out on test, the results are in. The answers all come up "yes."

Test results may add some light to the railroad-shipper debate over the profitability of high-cost box cars. They may also put more pressure on shippers and receivers to arrange their facilities for handling palletized or unitized shipments.

The research effort began last year when five "perfect" box cars—perfect, at least, in the eyes of the shippers polled to establish the dimensions and equipment of such cars—were sent after some important technical and statistical information by Evans. The five EELX cars were sent out (RA, Nov. 19, 1962, p. 14) to determine:

- How much revenue railroads could expect to produce with such cars.
- How much heavier the EELX cars could be loaded with their higher usable cube.
- How much loss and damage to lading would be experienced in such perfectly equipped cars.
- What savings in car maintenance result from the cushion underframe with which the cars are equipped.

After a year of close record-keeping and observation, the EELX car results look like this:

- Revenue, for 49 car-months, stands at $47,042.75, compared with a figure of about $18,000 earned in 49 months by an ordinary box car.
- Lading weight, based on 99 trips by the EELX cars, came to 79,712 pounds on an average per load handled, with a high average weight for EELX 60003 of 88,387 pounds per load for 19 trips.
- L&D results were spectacular: Claims were 82% less for loads carried by the EELX cars—and those claims, Evans says, were primarily due to shipper inexperience in properly utilizing the damage-prevention devices with which the cars are equipped and/or improper palletizing or unitizing techniques used in loading the cars.
- Maintenance will be "considerably less" for the EELX-type cars, according to Evans engineers, though "it's too early to have any startling statistics after only one year of observations."

J. J. Conway, corporate vice president in charge of Evans' Transportation Equipment Division, says: "From our viewpoint, we are more than satisfied with the EELX program. We have learned a lot, much of which is being put to particular use. As a result, we feel we are 'on' to what railroads need to have."

The EELX cars are 50-foot, RBL-type cars with 10-foot staggered plug doors and have a capacity of 4,618 cubic feet. They are equipped with floors of hardwood, for handling fork-lift equipment; bulkheads to prevent shifting of lading in transit; adjustable sidewall filters to adjust car width to eliminate voids when handling palletized loads; modern cushioned underframes. They have a floor level not more than 48 inches from the rail, for proper dock loading. The cars cost Evans $19,301 each, but would probably cost "in the neighborhood of $18,500—in quantity and without the fancy paint job we gave them," notes Bob Byrne, Evans' general manager of railway equipment sales.

Tests fully documented

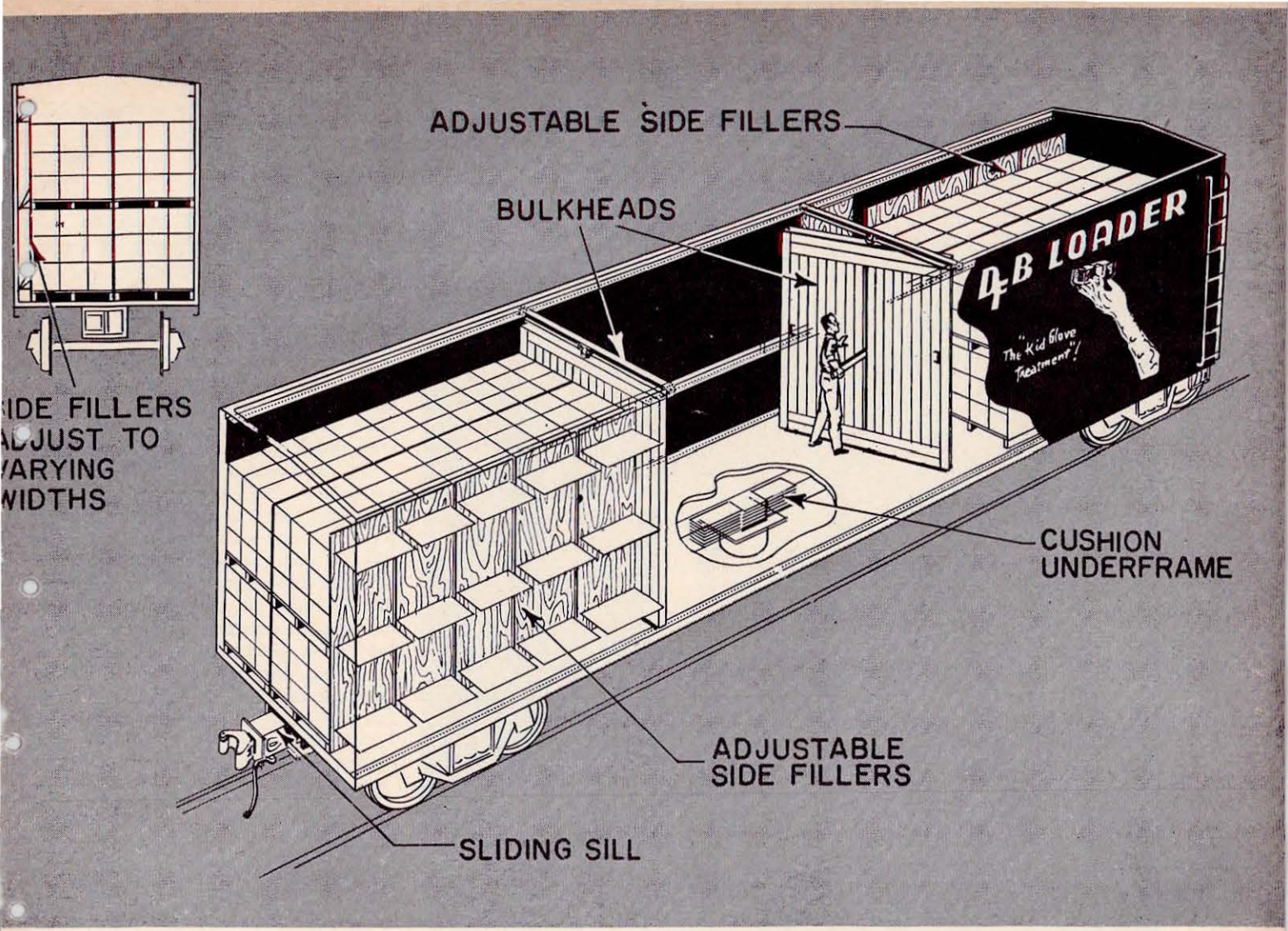
The year-long railroad and shipper experience with the EELX cars was carefully documented by Evans engineers, accountants and sales personnel. Project manager for the $200,000 project is James R. McMillen, who acted as coordinator for the considerable correspondence, interviewing and data-gathering needed to record a profile for every aspect of the five EELX cars at work on the railroads. Records were kept for such items as shipper, load, date shipped, routing, date received, receiver, weight, rate, loss and damage, type of lading (palletized, unitized or deadpiled), mileage, revenue and cause of L&D—for every trip taken by the EELX cars in their year's travels.

- **Quick reaction.** Both railroads and shippers proved eager to have the EELX cars for test loadings. Though about 35,000 cars on U. S. railroads are equipped with modern types of cushioning devices and 15,000 cars are equipped with bulkhead devices and 6,500 cars are equipped with sidewall devices that allow shippers to adjust box car wall widths to load widths, no one knows how many cars in the Class I fleet are equipped with all three devices. Evans Railway General Sales Manager Richard K. Tobin estimates that "there may be as many as 5,500 box cars so equipped in railroad service."

"We were—and are—sensitive to the feeling many railroad men have that suppliers promote directly with shippers," notes Mr. McMillen, "and were thus glad to see that a half-dozen railroads immediately began asking for the cars when we put them on the road. We were, of course, glad to oblige the carriers making the requests. Some carriers—the ones with heavy ownership of cars equipped, more or less, like the EELX cars— already have experience in this direction. Roads like Santa Fe, Canadian National, Canadian Pacific, Chesapeake & Ohio, Chicago & North Western, Rock Island, Gulf, Mobile & Ohio, Missouri Pacific, Southern, Southern Pacific, Cotton Belt, Frisco, Union Pacific—to say nothing of the private car lines like PFE, North American and FGE—are in a position to check the technical and revenue performance of EELX-type cars themselves." Mr. McMillen also cited the thousands of EELX-type cars ordered so far this year, plus recent large increases in orders for equipment to outfit EELX-type cars—amounting to almost 500 cars—by two eastern carriers as proof of how carriers are becoming alert to the earning power of the fancy box cars.

- **'Tremendous' response.** "Our shipper response was remarkable," says Mr. McMillen. "We have a major shipper, Procter & Gamble, keeping one of the cars for a long time, test-loading it and observing its condition at destination and showing the car to their regional people. They are enthusiastic about what can be done by this type of equipment and are studying shipping patterns with a view to cashing in on the savings that become possible once trends in high loadings, incentive rates and handling-cost reduction through palletized freight come together."

The shipper interest was not confined to Procter & Gamble, however. Ship-



Basic elements of Evans Products' 'perfect' car are illustrated in above cutaway drawing.

pers and receivers—already converting to unitizing and/or pallets for shipments—were quick to make use of the opportunity to use the EELX cars.

An EELX car loaded by National Distillers Products Co. at Carthage, Ohio, with bottled liquor in cases, stopped off at Cliffside, Ky., and Louisville, Ky., to complete loading before heading for a receiver at San Bernardino, Calif. The car, routed L&N=A&S=SSW=SP=PE, carried 110,000 pounds of lading—40,000 pounds at one end, 30,000 pounds in the doorway section and 40,000 pounds in the other end. At the receiver's dock, an Evans representative, R. A. Bell, (Evans men checked EELX car deliveries as often as possible during the year-long program) and a Southern Pacific representative, Gene Harrison, were on hand when the car was opened. Mr. Bell's report to Mr. McMillen: "Lading in perfect condition . . . no shifting of load . . . in a total load of 2,525 cases containing half-pints, pints, and quarts, etc., or about 12 different case sizes in all. There was no odor in car and feel sure there will not be even one broken bottle. Photos of doorway and load behind bulkheads will be forwarded. SP rep could hardly believe the car had moved across country and mentioned it was phenomenal that no damage occurred in so heavy a load." In fact there was no damage at all in the car.

● **Data comes in.** Evans' EELX cars, whenever they arrived at a receiver's dock were accompanied by a letter asking for information on the condition of the lading and the receiver's view of the car's performance. EELX 60002 arrived at the Pinnacle Sales Co. in Knoxville, Tenn., after being routed Milwaukee=Monon=Southern from Milwaukee, loaded with 69,237 pounds, and was found to be in perfect condition. A Southern freight agent and claim man were present, along with an Evans representative. The Evans man's report indicated the receiver's Mr. Buttrey described usual damage on that kind of shipment as "quite high." Mr. Buttrey returned the letter asking about the car's condition with this comment: "We did not have one bottle broken in the load. Wish we could receive loads like this from now on."

A high percentage of the firms using the EELX cars returned questionnaires to Mr. McMillen reporting on the condition of their loads and the performance of the EELX cars. As might be expected, some things went wrong. "Material received in perfect condition—but the bulkheads operated with difficulty," reported one receiver. The car was shopped immediately to discover what was wrong with the bulkheads. "Some soft bolts had been used in the linkage," recalls J. P. Moorehead, director of engineering. "We replaced them with case-hardened bolts and released the car for more loading." A warehouse, one of the receivers reporting damage, noted: "Major cause of damage were 2x4 boards placed under top pallet, causing crushed cases. We recommend the use of 4-way pallets which will evenly distribute the weight on the bottom pallet."

An enthusiastic reply from George Dinwiddie of George Dinwiddie Inc., Pabst Brewing distributor of Knoxville, Tenn., reporting on a 62,000-pound shipment, palletized, from Peoria, Ill., via Illinois Terminal=Southern, said, simply, "This is the answer to shipping beer especially on pallets. Very satisfactory." A Detroit receiver wrote, "One of the best cars we've received," and the Evans man present when the

Damage-reducing bulkhead is placed against end load of EELX car.

car was unloaded wrote in his report, "Unloading crews were enthusiastic about the ease of opening doors and handling them." From H. J. Nichols, of Gerber Food Products in St. Joseph, Mich., "Palletized shipment received in excellent shape. Not a single case of damage." S. L. Burdick of the George Abbot Co., of Norfolk, Va., said: "Enjoy working with a car of this nature."

● **All but one.** All replies save one said they would like to receive an EELX car for loading or unloading again. The exception was a Lancaster, Pa., warehouse that noted they wouldn't like to get another EELX car, "only because it is too long to be unloaded easily from our short siding," even though the EELX car was only 50 feet long.

L&D was mostly caused by trouble with loading in doorways and by faulty unitizing or by load dimensions. A thoughtful letter to Mr. McMillen from Wayne D. Arnold, general manager of the Arlington Division of Great Southwest Warehouse, Inc., commenting on L&D in a shipment said: "The condition of the merchandise in the doorway was only fair. The merchandise loaded on pallets in the brake end of the car and in the opposite end was in good shape, although there were a few cases damaged. It seems that additional study needs to be given to the doorway portion of the loads. . . . We hope to receive more shipments in these cars, as we feel it greatly reduces the damage and, naturally, the time for unloading."

Another case of damage was reported as "very slight damage. The problem here was one of additional handling. The cases in the end without separators interlocked and tumbled upon attempts to remove with a fork lift truck. We are working to improve the pallet pattern." Another report of "no damage, but . . ." came from the West Coast where a receiver noted, "Believe top pallets were tight but bottom pallets shifted. Took seven hours to unload. Should take four."

● **Pro-EELX: 5-to-1.** While the statisticians and sales personnel at Evans were generally elated by letters and reports on the EELX cars all over the country—the favorable letters and reports outnumbered the unfavorable five-to-one—there was one area of the project's information-gathering that went on at a fast, even clip: The technical data on performance of the devices with which the cars were equipped.

Mr. Moorehead says, "The fact is, we kept the EELX cars under an engineering microscope this last year. We have the cars in periodically for inspection and testing, for actual refining of the devices we have installed in them. We have not yet had to perform any maintenance whatever on the devices or the car structures. We had to repair a door that was bashed when a switch crew cornered the car on a switch lead, but that is all the structural repair we have had to do. It will, of course, take several years to get an accurate view of the savings that may come about to owners of this kind of car because of reduced maintenance."

Mr. Moorehead describes the value of the EELX cars as providing "practical experience as well as engineering experience, both under perfect control." Side fillers, he notes, needed more refining to operate easily in the early, 3-position version, so Evans designed and installed on the EELX cars an improved version so that "side fillers in this project would be as good as possible." The same experience and data led Evans engineers to development of the six-position and full-wall side filler that has the ability to change inside box-car width with 14 different positions on each side of the car. The full-wall device, developed at the request of Proctor & Gamble, does not, in Mr. Moorehead's view, obsolete the three- and six-position sidewall fillers now in use, "but will prove valuable to many shippers—especially those who use clamp-type lifts."

● **Tests prove out.** Other technical improvements were the changes that resulted from the testing of combination steel and aluminum bulkheads. "Our experienced proved to be very satisfactory," says Mr. Moorehead, speaking of the developmental tests made on yet-unused equipment destined for eventual installation on the EELX cars, plus the experience that is emerging in Evans' engineering department from the periodical examination of the EELX cars when they come back to Plymouth, Mich., for inspection: "All the sidewall fillers, bulkheads and other devices are

(*Continued on page 32*)

System-wide EDP on tap for ACL

Atlantic Coast Line's new communications system will be able to do just about everything—from locating a car to accounting.

Computer usage by American railroads has grown tremendously in the last few years. "Ten years ago the area of railroad computerization was unexplored and barren," reported Frank H. Coyne, Jr., assistant general auditor, Southern Pacific, at a recent cybernetics conference in Paris. Today, he continued, "an area of employment has been created in the industry for close to 7,000 people, almost 140 computers are presently installed or on order, and roads comprising 90% by revenue of all Class I American railways now are firmly committed to computers."

Representative of the growing trend toward the systems approach to computerization and data processing is the Atlantic Coast Line. Not only will ACL's new computer and data communications system (RA, Nov. 4, p. 44) perform the conventional accounting functions, but it will operate in "real time." This means that much of the data will be processed as it is received at the computer center in Jacksonville to provide up-to-the-minute reports, such as car locations.

"This is the way to obtain operating and management control of a railroad such as has never before been possible."

That's an apt description, by President Thomas Rice, of the system concept of data processing which will be inaugurated by Coast Line as soon as the computers and other data-processing "hardware" are ready—probably in mid-1964. The intervening time is being spent educating the railroad's officers, supervisors and employees in the operation and uses of the new system.

There is practically no limit as to what the system will eventually be able to do. For its initial phase, however, the following will result:

- The originating yard will supply advance train consists to the central system, known as the central data processing center (CDPC). Before the originating yard has finished sending, the CDPC will be sending the consist to the next mechanized yard down the line.
- Permit a perpetual yard inventory to be kept that will, on demand, supply the exact location of any car in any yard, along with the car measurements and type of car. It will also supply data as to why the car is there, or, if there is no reason in its memory bank, it will call the attention of the central bureau to its presence where it shouldn't be.
- It will permit centralized freight agency accounting and waybill settlement with foreign carriers.
- Freight and passenger equipment inquiries, including cars and locomotives, by types and sizes, will be rapidly answered. On request, the CDPC will be able to answer at once any question as to the location of any car or any locomotive on the entire system.
- The system will permit improved revenue estimating and analysis.

The Coast Line has had several years' experience with IBM data processing equipment. However, hitherto it has been established in a group of separate operations, such as accounting and yard office procedures dealing with car handling. The new data communications and EDP equipment is part of a system-wide concept of data-processing —all inter-connected.

- **The hardware.** As initially set up, the CDPC will consist of an on-line 1460 computer and an off line 1460 standby and printer. (In computer parlance "off-line" describes a system where human operations are required between the original recording functions and the ultimate data processing; "on-line" describes a system which eliminates the need for human intervention, after the original programming, between source recording by the computer). Both of these terminal units will consist of a 1448 multiplexer, a 1460 processor and attachments (1441 processing unit, 1461 input-output control and 1447 console). They will also include tape drivers, tape storage and disc storage files with control circuitry. The off-line unit will also include a printer. This unit, while called a "stand-by," will have an exceedingly busy life of its own, printing and otherwise processing the on-line unit's data. It's referred to as stand-by only because it may be used to cut into line instantly in case of any malfunction of the first unit and continue that function until released. The CDPC will also include an off-line batch processor, where a number of input items will be processed and grouped. This batch system will comprise a 1410 processor console, with 1411 processor units, 1414 synchronizers and a 1415 console as attachments. It will also include two 729 tape drives and a 1442 card reader.

The field installation will include 29 data communications units (1050s) at the principal terminals of the railway, scattered from Richmond, Va., to Tampa, Florida. In addition to these so-called mechanized terminals, nine smaller terminals will be equipped with key punch machines. The 1050s not only send and receive data to and from the CDPC, but they also have a printer component. With this, data from the system's input units, through a method known as home-loop operation, may be recorded on the system's own output units, this ability being valuable for the extremely rapid production of switch lists, yard checks, etc., for the terminal's own use. Communications over the nine separate lines will be leased from commercial telephone companies. All of the new equipment has been ordered from International Business Machines Corp.

- **Thorough study made.** The idea for the system originated from observation of the computers already in comparatively limited use on the Coast Line. It did not germinate, however, until IBM announced its new computer and data communications system TRAIN (Tele-Processing Random Access Intelligence Network). A committee was appointed to study possible uses for the new tool. This committee consisted of R. L. Cornelius, assistant comptroller, who studied the auditing features, N. S. DeMuth, general freight agent, who considered the possibilities for instantaneous tracing of cars, and L. H. Scott, Jr., for operating studies. The latter, who was then staff assistant to the general manager, has since been transferred to the executive department and, under the title of manager, special services, will supervise the system and its various uses.

This committee rendered a report to the president as to the uses of the system concept. As a result, the hardware was ordered. The committee then set about studying its operation. Their final report includes what seem to be all possible contingencies. The initial working will be on a division rather than a system basis, with other divisions being worked in as the equipment is delivered and the educational process completed. The target date for system-wide application is the end of 1964.

- **How it works.** When a cut of cars is received from a connecting line, a yard clerk will make a visual check. This, though, will not be done with a

New data system promises speed and accuracy

grubby pencil on paper that's often wet from rain and snow and in frequently illegible writing as the clerk stumbles over the tie ends. Instead, he will have a portable tape recorder into which he will dictate the data. This list will go in to the CDPC and all the cars on the list will be checked against the master equipment register contained in the system, as to the car number and initial, capacity, type of car and other pertinent data. If the yard clerk has made an error, it will show up instantly during this check.

Other data will show whether the car is loaded or empty—if the former, what its contents are according to the seven-digit transportation commodity code to be adopted nation-wide on January 1. The junction point, the railroad from which received, the point of origin and of destination will also be stored in the memory files of the computer, ready for instant use when required. If it's a TOFC car, the initials and number of the trailers will also be shown.

• **No wheel reports.** Conductors' wheel reports will be rendered completely unnecessary, although the conductor will have to report certain information in some cases upon arrival of a train in a mechanized terminal. When the train is made up, ready to leave the yard, a further check is made on the portable tape recorder. This data is checked against the train consist deck of cards. Then a header card is keypunched and sent to the computer with the deck. Information sent includes data as to the time of departure, tonnage and a variety of other material and it will further show all of the information on the cars comprising the train. When received at CDPC, each car record will be updated to show that it's now en route and on what train. Even before this consist has been fully received at the central station, it will be sending the first part of the consist to the next mechanized yard on the train's road. In other words, Rocky Mount, N. C., the next classification yard south of the Acca yard in Richmond, or South Richmond yard, where cars are received from connections and trains made up, will have complete train information within 10-15 minutes after the train leaves the initial yard. Rocky Mount, in turn, will be reporting its train consists, via CDPC, to the next terminal South and so on down the line. Thus yardmasters can plan their switching moves prior to a train's arrival.

• **Increases yard efficiency.** There are other features however that will tend to improve yard operation vastly. A car simply cannot get lost in a yard. Once it has been reported in a cut from connecting line or as on-line loading, if it doesn't move, the computer keeps bringing it to the attention of the central bureau and, they, in turn, will call it to the operating department's attention. This, with the perpetual yard inventory stored in the computer's memory banks and constantly updated, will not only be of tremendous value in determining how a given yard is being operated, but will also enable the general yardmasters to have complete, instantaneous information to enable them to operate their yards at maximum efficiency.

Let-off cars

While the conductors' wheel reports will be unnecessary, they will file reports on cars that have been set off for hot boxes or other mechanical reasons, on stop-off cars, on cars billed for partial unloading and on trans-loading cars. Since the Coast Line handles a large amount of perishables there are many diversions and reconsignments en route. This factor was given special study and the computers will be of great aid in effecting these changes in routing and consignees. Cars moving on "shuck" waybills (a package containing the bills for the cars loaded with LCL) will be recorded in the system simply as an LCL car, without further detail, but, at the Jacksonville break-bulk point, the LCL waybill information will be entered into the system. All waybill information of any sort is captured on the magnetic tape at CDPC and a wide variety of data is immediately available for all sorts of reports, studies of traffic flow, etc.

• **Fast waybill checks.** This will be particularly valuable in rate cases. Instead of batteries of clerks painstakingly wading thronugh waybills and writing down pertinent information when they find it, the computer can turn out the data required in seconds by scanning the waybill memory files.

Passenger train consists will be sent from the initial mechanized terminal to CDPC, with header cards, locomotive numbers and initials, numbers and descriptions of the cars. Unless cars are set out or picked up, however, the consist will not be repeated until destination.

Initially, the processing center will produce through computer programs, some 43 separate statistical items dealing with car and locomotive miles and per diem and it will also produce 55 printed statements of various sorts. Its possibilities are virtually unlimited but there had to be a cut-off point somewhere and, initially, the system concept's output is held down by the number of trained programmers available. The Coast Line already has three trained programmers, but a great many more are needed. In response to a system-wide request, over 250 employees took the aptitude test. Of these, about 12 will be selected for intensive training at the present time. Meanwhile, key punch machines will be available on which to train the large group of key punch operators needed.

Actually, for the first few months, there will be a "parallel run"; that is to say, the present methods of handling what the computers will take over will be continued, as well as getting the information through the computers. This will afford comparisons as to the much greater speed and accuracy of the new system.

• **Advantages.** Briefly, the advantages of the system concept will be an immense improvement in the quantity and quality of the vitally necessary statistics for all sorts of operating and management control. The concept will eliminate duplication of employee effort and needless duplication of machine installations. It will transfer to the computers all possible functions now being performed manually, with an incalculable increase in speed and a great increase in accuracy.

Busy and versatile

Other advantages from the initial operations:

Centralized freight agency accounting; centralized car tracing and accounting; complete per diem and mileage records; automated preparation of performance and tonnage statistics; of interchange reports and of CS reports; perpetual yard inventory of loaded and empty cars (by types); much more accurate estimates of car hire payments; accurate evaluation of idle freight car time; electronic preparation of advance train consists; elimination of conductors' wheel reports; current information pertaining to the availability of freight equipment; instant location of all freight cars; rapid development of home route information; automated analysis of passing reports, by territories or other desired separations; continuous analysis of junction interchange information; fast confirmation of diversion information and accomplishment; more accurate means of estimating revenue: positive control of overhead, forwarded and received traffic; accurate computer-prepared statistics in any detail required.

Cybernetics symposium held in Paris

PARIS

"Railroads throughout the world have many common problems," New York Central President A. E. Perlman noted after attending the international conference on railway cybernetics here Nov. 4-13. "If one has evolved a method of tackling some of those problems through cybernetics, it is helpful for others to know about it. Certainly, in this case, we learned a lot from other railroads, and we believe they in turn learned a lot from us. It was," he concluded, "a very worthwhile meeting."

Sponsored by the International Railway Union (UIC), the symposium was hailed by Dr. H. Gschwind, president of UIC and of the Swiss Federal Railways, as "the first effort to hold a world colloquy and exchange of ideas among railway men, scientists and experts on the future prospects of automation."

Extent of interest was indicated by attendance of more than 400 delegates from 32 countries. More than half the visitors represented railway or transit systems. The others were from academic and research institutions, from governmental agencies concerned with transport, and from manufacturers of data processing and transmission equipment.

Underlying the decision to organize the symposium was the conviction of UIC officers that "railways are undoubtedly the means of transport which has the most to gain from use of automation and cybernetics. This is because their vehicles are guided by rails, and because they are organized on a large scale. . . . [Yet] studies and achievements concerning application of cybernetics to problems of railway operation [as distinguished from accounting and statistics] are still few in number and rather the exception on railways as a whole."

An added reason, pointed out by John Diebold, president, Diebold Group, Inc., New York, is that "railways have never before had to face so many difficulties all at once."

Louis Armand, UIC secretary general, commented, in opening the symposium that "in assuming gigantic proportions, railways run the risk of becoming unwieldy. . . . If railway networks wish to avoid sclerosis due to bureaucratic growth, and to achieve greater commercial flexibility, they cannot but resort to cybernetics. This is the only instrument at their disposal if they are to grow and yet remain pliable.

"We must therefore state our problems to cybernetic experts without delay. If we procrastinate on the ground that good solutions have been found to the problems of yesterday, we shall fail to make the most of a precious opportunity due to the fact that railways afford a privileged field of application for cybernetics."

It is, moreover, a field in which international cooperation is readily possible, because, as Mr. Armand also said, "there is little or no competition between railway networks throughout the world. Railways are in position to put ideas into practice on a world scale unimpeded." The directions those ideas are taking, or may take in future, are indicated by the list of subjects considered during the meeting (below).

The dangers

Successful as it was, however, the conference was not without some words of warning. There is "danger," said P. B. Wilson, chief of operational research, Canadian National, "of optimizing the solution of some one problem to the neglect of the overall situation." There is still too much "shyness" in the use of electronic data processing, in the opinion of B. H. de-Fontgalland, chief operating officer of the French National Railways' Northern Region. There is "no point in building up complicated systems unless they are more reliable than the men they replace," according to C. C. Inglis, chief of research for British Railways Board. "Technical ideas," Mr. Inglis added, "are often put into hardware without enough thought as to their ultimate purpose or objective." And, warned Prof. Gerhart Potthoff, of East Germany's Hochschule fur Verkehrswesen, some attention must be given to formal training in cybernetics.

The work was divided into five sections:

1) Problems of automation associated with control of all aspects of railway operation, covering the general relationship of cybernetics to railway operating; continuous control of operations; calculation of train formation diagrams; the drawing up of train and motive power schedules and crew rosters, and problems of car distribution.

2) Automation in control of autonomous procedures, including automatic train operation and centralized traffic control; automatic operation of stations and marshaling yards; economic factors in automation of marshaling yards, and programming of electric traction power supply.

3) Application of computers to railway management, dealing with stores and staff management; financial management, accountancy and statistics, and seat reservations.

4) Definition of mathematical methods and operational research procedures to be used in solution of transport problems by electronic computers, covering also the planning for traffic flows.

5) Technical facilities for data processing and transmission, and organization of calculation centers, including also systems of automatic vehicle identification.

Several of the sections held joint meetings for discussion of common problems. Field trips were arranged to some of the newest automatic installations on French railways, and to various computer centers.

The American delegation was active. Both size and activity of the delegation fully justified the statement by AAR Vice President Curtis Buford, that "we are beginning a new era of cooperation between railways of North America and the rest of the world."

The official AAR delegation, headed by Mr. Perlman and including Messrs. Buford and Wilson, numbered 15 US and Canadian railroaders. Other representatives of US and Canadian railroads, manufacturers and research organizations brought total attendance from North America to well over 10% of the official registration. US delegates included Presidents G. B. Aydelott of the Denver & Rio Grande Western, W. Arthur Grotz of the Western Maryland, and L.W. Menk of the Frisco.

—Gardner C. Hudson

How GN tamps turnouts fast

Using machines designed especially for working through switches, the Great Northern has undertaken a program for tamping turnouts 'out-of-face' on its main line between Minneapolis and Seattle.

Switch tamper "picks up" joints as it prepares to tamp a turnout.

The visitors watched intently as the machine progressed through the turnout, tamping the ties of the main-line track as it went. They were particularly observant as the unit tamped through the frog and switch areas, noting how the operator manipulated the tamping tools, inclining them inward or outward as necessary to penetrate narrow places or to straddle wide portions of the trackwork.

They noted also how the operator, riding the tamping head, shifted it laterally from one rail to the other or as required by the track layout.

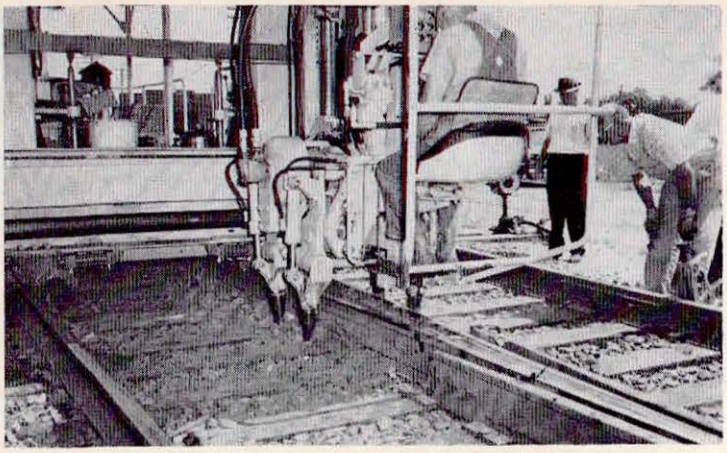
● **Special machine.** The location was Willmar, Minn., on the Great Northern. The visitors, track engineers from various railroads, were there to observe the GN's use of a machine specially designed for tamping track through turnouts.

The machine they were watching was engaged in an unusual program. Its assignment was to tamp all the turnouts on the Lines East portion of the GN's Minneapolis-Seattle main line. This territory extends from Minneapolis to Bainville, Mont., a distance of nearly 650 miles. A similar machine had been put to work to perform the same job on the Lines West to Seattle, Wash.

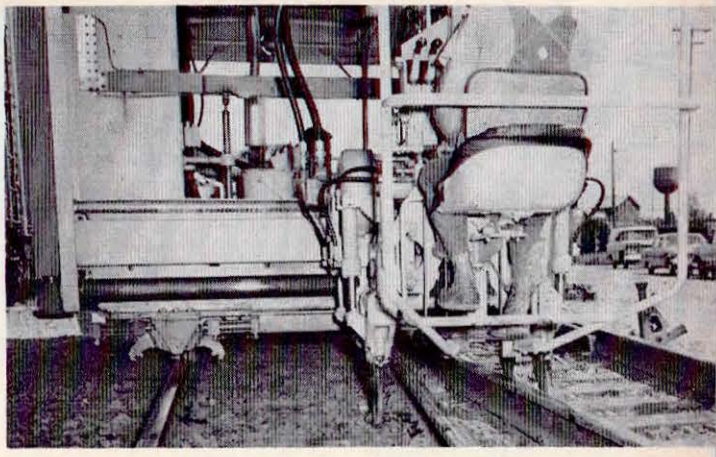
In 36 working days the machine on Lines East had progressed from Minneapolis to Willmar, 90 miles away. In this period it had tamped 54 turnouts, plus 403 joints on adjacent trackage to eliminate hanging ties. About half the turnouts were No. 20's and the remainder mostly No. 11's.

This is largely a single-track line and the turnout tamper works under traffic. Allowing about 3¼ hours a day for travel time and delays due to train interruptions, the actual working time is about 4¾ hours daily. With an average of 1½ turnouts being tamped per day, this means that the tamper was working at the rate of 2½ to 2¾ hours per turnout, including the tamping of joints on adjacent trackage. W. J. Cruse, GN's engineer maintenance of way, estimates that the time spent actually tamping turnouts averages about 1¾ hours per turnout, with the remainder of the time being devoted to the tamping of joints.

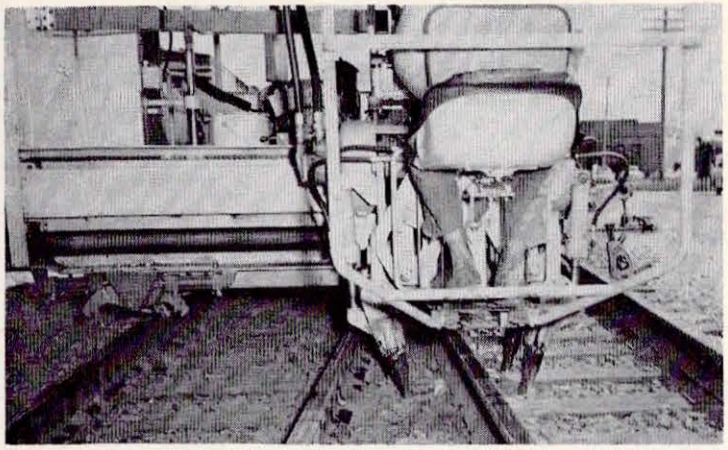
● **Production going up.** A GN spokesman noted that the production of the machine working on Lines East had been increasing as the operator gained experience with it. This, he said, was shown by the fact that at the end of the 36-day period the operator



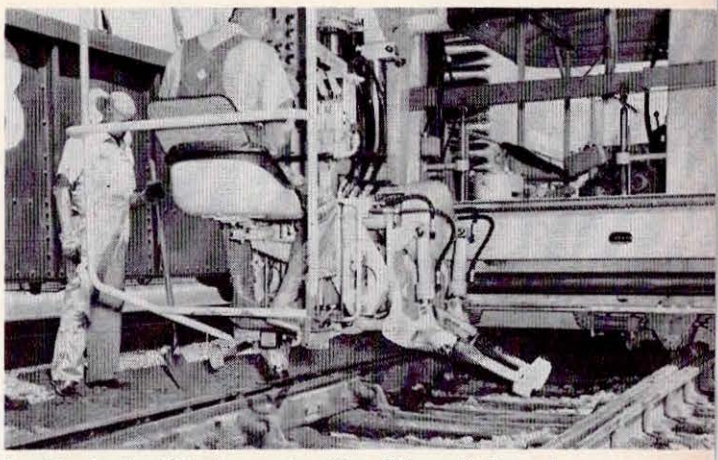
Machine begins to tamp through the frog.



Now past frog the tools straddle two rails.



Tamping in close quarters between two rails.



Inside tools tilted up at crib with switch rods.

was finishing an average of about two turnouts each day, whereas average production for the full period was only 1½ turnouts per day.

The two machines being used in this work are both Plasser WE-75 Switch, Yard and Spot Tampers. In this machine the tamping is done by a four-tool tamping head that utilizes the vibratory-squeeze tamping system and which is identical with the tamping heads used on all other Plasser tampers. On the WE-75, the tamping head, along with the operator's seat and the controls, is mounted on the front end of a track-mounted carriage in such a manner that it can be moved to any position across the track. A feature of the tamping head is that the tools may be tilted individually inward toward the rail or outward away from it. The angle of outward tilt is said to be 85 degrees.

Separate controls for the travel of the machine, along with an operator's seat, are placed on the carriage. Maximum travel speed is about 35 miles per hour.

● **To include track liner.** When the switch tamper on Lines East was seen in operation at Willmar, the force working with it, in addition to the operator, consisted of the local track foreman and three of his men. The intention, said Mr. Cruse, is to include in the gang consist a Kershaw Track Liner with Nordberg Line Indicator, which would add an operator and a laborer to the force. At the time the tamper was seen in operation the liner had not yet been made available, but it was expected that it would be obtained shortly. Up to this time the tamper had been working in an area where the road has several mechanical liners that could be used for lining switches after they had been tamped.

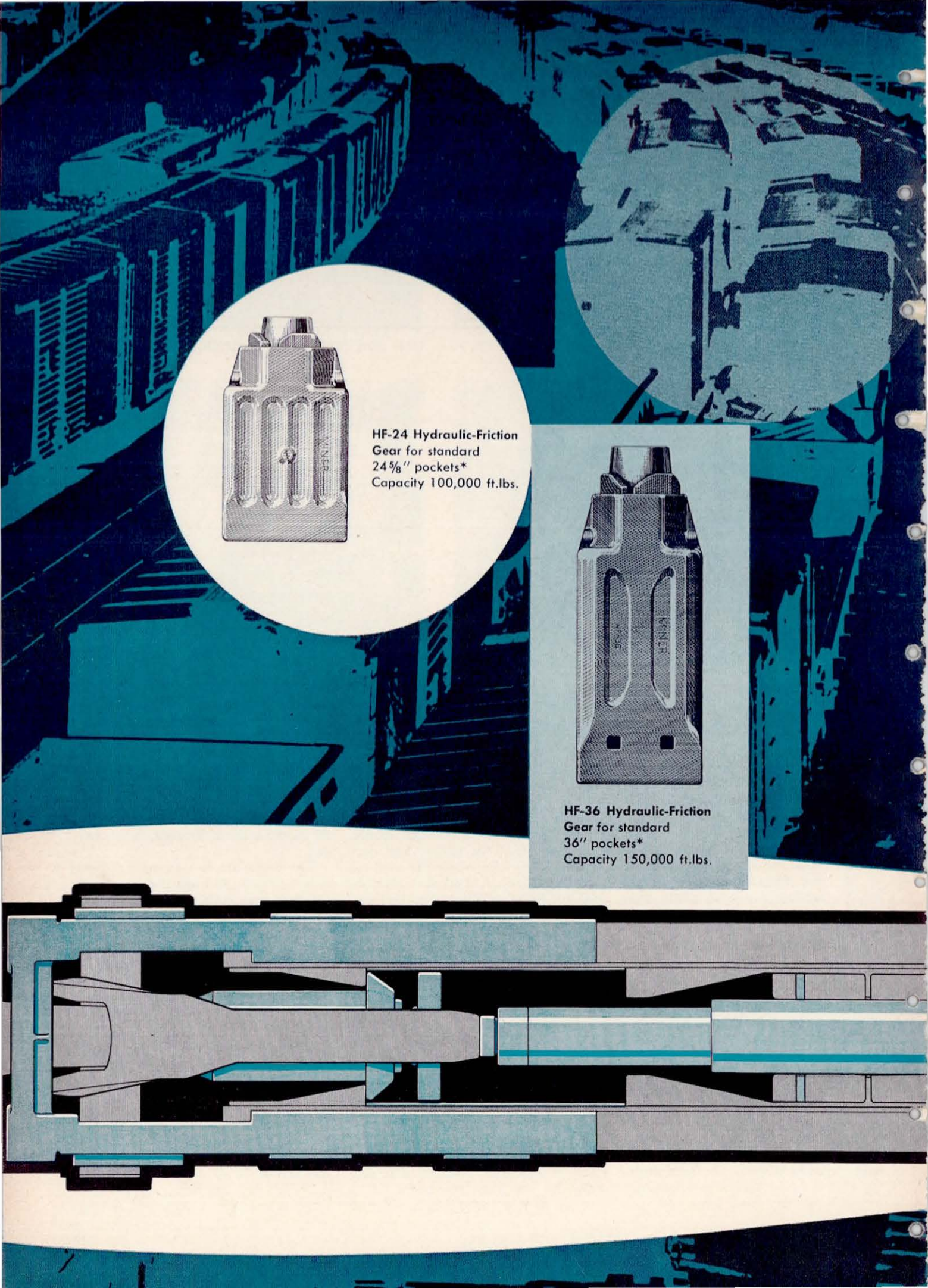
The switch tamper seen working at Willmar was equipped with hydraulic jacks, but the track-raising work was being done with hand jacks. Actually, explains Ben Treml, assistant superintendent maintenance and engineering, Willmar division, the use of hand jacks for this purpose has no effect on the amount of labor required. The same number of men would have been needed anyway for performing the other incidental jobs, such as throwing in ballast, involved in tamping turnouts.

● **Sights raise by eye.** Using a spot board, the foreman was sighting the track by eye. He explained that generally he sets the spot board for a nominal raise of one-half inch, although this is determined somewhat by the amount of ballast available. Basically, the purpose of the work is to remove low spots and to "tighten" the turnouts throughout their length. Also, the joints each way from the turnout are "picked up" as necessary to eliminate hanging ties. Any additional ballast needed to fill in the cribs is brought in by push car.

The procedure in tamping a turnout is first to tamp through the turnout on the main line, at the same time picking up the low joints in both directions, which is usually about two rail lengths each way. The machine then gets on the diverging track and tamps it out to a point just beyond the frog.

● **Uses tiltable feature.** When tamping in the vicinity of the frog and the switch points, it was noted that the operator took advantage of the tiltable feature of the tamping tools to tamp in locations that otherwise would not be accessible. When tamping ties in the vicinity of the switch rods, either one or both of the tools on the inside of the rails were tilted up to the full 85-degree angle to permit the tools on the outside to do their job.

"With this machine," says Adam Engelhart, district roadmaster at Will-



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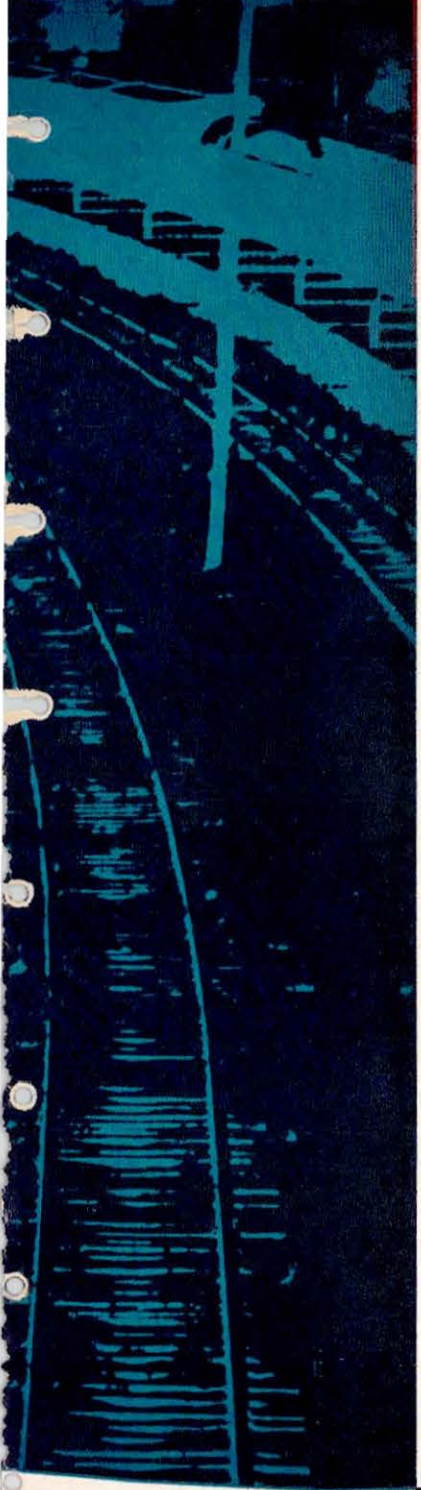

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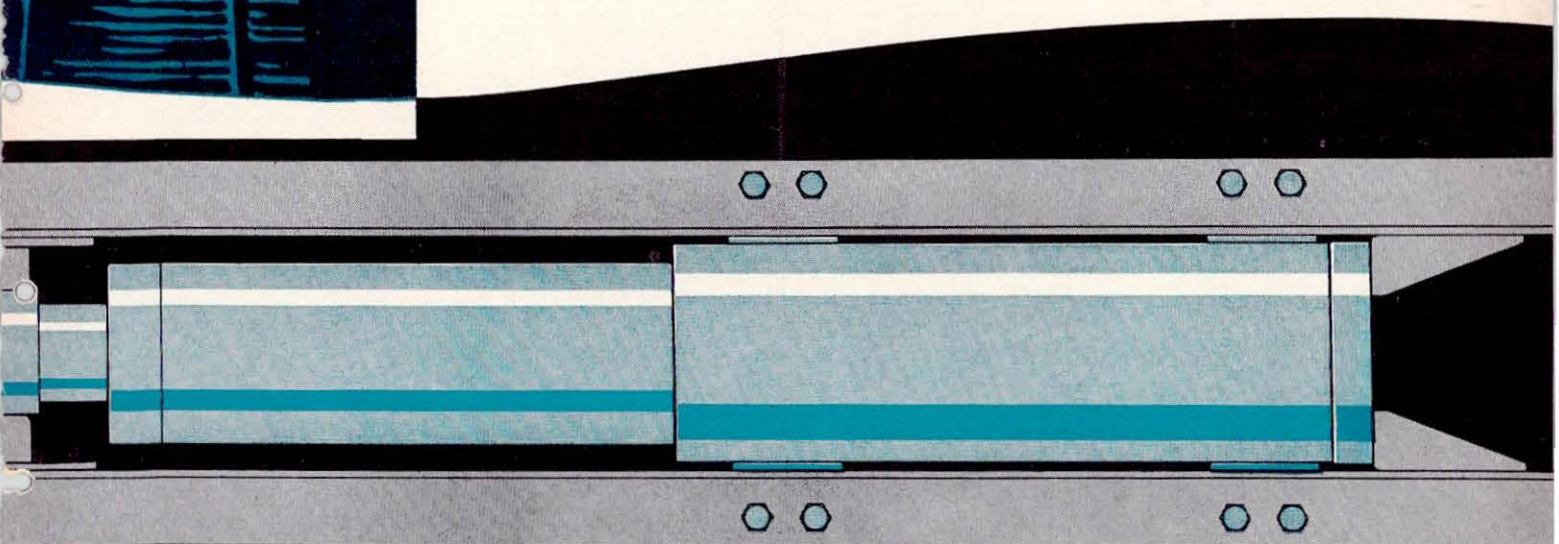

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RAILROADING AFTER HOURS WITH JIM LYNE

LYNE

NO NON-OP 'FEATHERBEDDING'?—I note that the non-op brothers have been doing some advertising designed to persuade the reader that there's no "featherbedding" in their ranks. They seek to prove the point by showing figures of employees per mile of road in the U.S. (3.7), compared with 4 times that many in France and 8 times as many in Britain and Russia.

This is like comparing the number of fur coats in Canada with those in Florida, and trying thus to show that Canadians are more sensitive to cold than Floridians are. Actually, it's the temperature of the place that largely determines the number of fur coats in use—just as it's the kind of railroad job that has to be done that largely determines the intensity of employment.

European railways employ more people per mile than U.S. roads do because (1) most of their important lines have greater density of train movement than do U.S. railroads; (2) their ratio of passenger traffic to total is much higher than it is here; (3) their wage rates are much lower—reducing the economic pressure for mechanization; (4) most European railways are not required to pay all their expenses out of revenues, as U.S. railroads must.

You could have what is called "featherbedding" (wasteful employment) with few employees per mile, and you might have no such waste with a much larger number. It all depends on the kind of railroad you are running.

If U.S. railroads tried to operate, at today's wage rates, with as many employees per mile in 1963 as they had in 1922 (as the non-ops seem to believe they should), then all our railroads would be out of business, employing nobody.

STEAM LOCOMOTIVE SOUNDS—The Mobile Fidelity Record people at Burbank, Calif., have sent me "Twilight of Steam," a 12-inch record of the sounds of 17 steam locomotives from widely separated locations in the U.S. and Canada. Most of them are from short lines (narrow gauge included), but the SP is represented, as is the Burlington and the CN. There is certainly as wide a variety of whistle sounds on this record as I can recall hearing anywhere.

Some people talk of "the steam locomotive whistle," as if all of them were alike—whereas, of course, they had all the variety of the instruments in a symphony orchestra. On the railroad where I grew up, most of the current freight engines and switchers had single-tone screechers—with the chime jobs reserved for the passenger power. The really old tea-kettles had the loudest and most dominant blasts of the lot. As if a Chihuahua pooch were to bark like a hound-dog.

TANK CAR FOR LIVE FISH?—In this corner June 3, p. 24, I reported that a Belgian railway publication had printed an apparently faked picture of an "aquarium car" (glass tank) for transportation of live fish. Maybe it wasn't a fake after all. Anyhow, my editorial colleague, Gardner Hudson, now tells me a Russian brochure on display at UIC headquarters in Paris illustrates and describes what purports to be a live fish refrigerator car, superficially similar to a U.S. reefer. The description says the car can carry up to 8 tons of "live fresh water fish for long distances," in aerated and oxygenated water.

RELIGIOUS RAILROADERS—An anonymous friend has sent me from Battle Creek a copy of the little paper "Christian Railroader" (published in Toronto), the content of which offers further evidence to bolster my belief that, on the average, there are a lot of railroaders who profess pretty strong religious convictions.

What puzzles me a little, though, is—if my conclusion is correct—why isn't there more evidence of these religious beliefs in (say) the conduct of interdepartmental or union-management differences on the railroads? A couple of fellows can, of course, share the same religious thoughts and still be on opposite sides of the fence on interdepartmental or union-management questions. But aren't they obligated to be pretty charitable in their treatment of each other? And, especially, aren't they called upon to be strictly honest in their statements on controversial questions? Do their practices parallel their professed beliefs? These are not trick questions. I'd really like to know the answers.

mar, "we can tamp anywhere in a turnout except in the cribs containing switch rods." For tamping in these locations, Jackson hand-held vibratory tools, operated from a portable generator, are used.

Early during the operation of the switch tamper it was following behind a smoothing gang which skipped the turnouts. Soon, however, the switch tamper caught up with and passed the smoothing gang. This is considered to be the better arrangement. One reason is that it is felt to be easier for a smoothing gang to "work into" turnouts that have been raised than to make the runoffs required when the turnouts are to be raised and tamped later. Also, when the switch tamper is working ahead, the smoothing gang will know how much ballast to provide for the turnouts as it comes to them.

- **New flagging rule.** When the turnout-tamping crew is working in CTC territory it is subject to a new flagging rule recently put into effect on the Great Northern. Under this rule the foreman gets a trackman's permit that allows him to occupy the track for a specified period of time. This rule involves the use of a device for shunting signals while the track is being occupied. The shunt consists of a length of conductor cable with a clamp at each end for attaching it to the rail bases. In non-CTC territory conventional flagging rules apply.

Clearing for trains

Usually the tamper can clear for trains by moving into the siding where it is working. If this siding is to be occupied by another train, the tamper runs to the next siding. At night the machine is tied up on a siding and the switch is spiked.

- **Experienced operators.** The switch tampers have been placed in a machine group that calls for the use of operators with seniority over an entire district. This assures that the operators will nearly always be employees experienced in the operation of these particular machines.

The Great Northern is now planning to try out a new Plasser tamper somewhat similar to the WE-75 except that it has two tamping heads mounted on the front of the carriage in such a manner that they both have lateral travel. This machine is known as the Plasser WE-275 Universal Purpose Tamper. Since both tamping heads may be operated from a common set of controls, Mr. Cruse visualizes that the machine can be used as a one-man operated production tamper which, when a turnout is encountered, can proceed to tamp through it with the same flexibility as the WE-75.

A plea for balanced transportation; Baltimore's big chance

The automotive jungle

The insatiable demand of the automobile for more highways and more parking space in the nation's cities threatens our metropolitan areas with literally becoming "asphalt jungles."

And, unlike in the Edgar Rice Burrough's variety of jungle where the inhabitants got around by swinging over things, traffic in the modern jungle may eventually come to a virtual screeching halt.

This is the warning sounded by David C. Bevan, chairman of the finance committee and chief financial officer of the Pennsylvania, who believes that "unless some relief is provided by increased use of public transportation, peak hour congestion in our urban streets and highways is destined to make them virtually impassable."

Calling for a balanced transportation system, he declared:

"None of us in the transportation industry have been so foolish as to propose that we should do away with freeways and expressways. Rather, each mode of transportation should be used to its best advantage. Where rail systems can save the public money in total costs and help make the highway dollar go farther, they should be used."

He pointed out that Philadelphia has taken this approach in its nonprofit, City-supported Passenger Service Improvement Corporation, and in the surrounding counties through the Southeastern Pennsylvania Transportation Compact.

"The important thing to remember is that suburban rail services are a public service," he said. "Regardless of the subsidies given their competitors, the railroads are not asking for subsidy. At the same time, private enterprise cannot afford to subsidize metropolitan areas by continued operation of these commutation services under present conditions."

Mr. Bevan said private enterprise contracting with communities or regional transportation organizations "can do this job efficiently and save money for the public," and such contracts do not constitute subsidies.

"Our metropolitan areas need the best possible total transportation system at the least total cost," he charged. "Therefore, this problem must be solved, not on the basis of what is best for the railroads, or for any other special interests, but on the basis of what is best for the people."

Japanese test monorail

A 1¼-mile trial track will be installed soon at Himeji City, Japan, to continue tests on the first monorail to be used for mass transportation in that country.

Developed by Nihon Lockheed Monorail Co., Ltd., Tokyo, the cars will ride on flangeless, resilient steel wheels on a conventional steel rail. The wheels will be guided on the 120-pound rail by two pairs of 18-inch horizontal stabilizer wheels bearing against the sides of the rail head.

Aluminum aircraft design and construction principles have been applied in building the cars, which will be able to seat 48 persons, with standing room for an additional 62. The cars will be 43 feet, 4 inches long, 10 feet wide, and will have a light weight of 33,660 pounds.

The train has been tested at Gifu since 1962, and reportedly can operate at speeds up to 75 mph.

Transport plan deadline

The U.S. Bureau of Public Roads, the guiding force behind the nation's 41,000-mile interstate highway program, has alerted communities that they must have a continuing comprehensive transportation plan in the works by July 1, 1965 or be in danger of losing federal funds for highway projects.

Affected are all urban areas of more than 50,000 population. These communities will be required to undertake a comprehensive transportation study—similar to those made in Pittsburgh and Chicago—to analyze every facet of community activity relating to transportation problems. The Bureau of Public Roads will pay up to 90% of the cost of such studies.

There is some concern among trucking groups that the Bureau requirement calling for a comprehensive plan by the 1965 date might be used by urban planners to stall freeway projects in favor of rail transit programs. They say this happened in Washington.

Rails urged for Baltimore

Philadelphia's city transit engineer has urged Baltimore's planners to devise a transportation plan that includes rail rapid transit because the city is in an enviable position to do so.

E. L. Tennyson, testifying before the Baltimore City Council's Transportation Committee, said that city "is very fortunate in having an existing grid of rail rights of way and other transportation corridors."

He said the existence of these rights of way would enable Baltimore to plan a modern rapid transit system at lower cost. The city has already appropriated $161,780 in local funds, matched by a federal grant from the Housing and Home Finance Agency, for a comprehensive mass transit study.

"This sizable investment presents a golden opportunity for you in Baltimore to study your transportation needs and to plan a thoroughly coordinated system," Mr. Tennyson said. "Evidence of the cooperation and coordination between your various transportation authorities is reflected in the joint study of the Maryland State Road Commission and the Metropolitan Transit Authority for a better transportation system for Metropolitan Baltimore."

PLANNING FOR GROWTH

Edmonton eyes rail transit proposal

The Alberta capital is growing at a vigorous pace. The highest growth rate of any metropolitan Canadian area raises the ugly prospect of choked street traffic and a suffocated downtown business district in a few years. Edmonton leaders decided not to be caught unprepared when the mixed blessings of big city life appear: they're giving serious consideration to a rail rapid transit system, as the best way to meet the population explosion.

The day is not far off when Edmonton, Alberta, will achieve the status of a metropolis, and this medium-sized Western Canadian city is hastening that day by laying plans for a rail rapid transit system.

A blueprint for a $100-million subway, surface and elevated system is now in the hands of planners. It still must gain the approval of the City Council; and financing (probably through a combination of federal and local funds, must be worked out. But, says D. L. MacDonald, manager of the Central Business District Transportation Study: "We hope to start digging in '68."

The Edmonton civic planners have few doubts about the rosy future of their city: the population has tripled in the last 20 years alone, and hovers around the 300,000-mark. The growth rate is the highest of any Canadian metropolitan area. Civic leaders consider rail rapid transit essential to serve the needs of a community that will be several times bigger before long.

• **Numerous studies made.** Before launching anything as expensive as the construction of a rapid transit system, the Edmonton planners had to have concrete information at their fingertips: they spent two years gathering it.

Population projections, traffic studies, marketing surveys of public attitudes—all bore out the idea that the city will be big enough, busy enough and willing enough to make good use of rapid transit.

Last year the city entrusted the Toronto firm of Canadian Bechtel, Ltd., with the job of preparing an engineering study and coming up with an overall rail transit plan. The results confirmed the project's feasibility and provided Edmonton with blueprints for a system that will meet the city's transportation needs for a long time to come.

First, the engineers had to know the size of the system that would be needed. The information they had to work with came from earlier surveys showing that by 1980, the metropolitan area would probably double in population, and that projected employment in the downtown business district was 75,000 to 80,000 persons.

Second, the engineers had to lay out a system that would take into account both topography and the population densities of various areas, in order to provide efficient access to the central business district.

Third, the engineers had to decide what the physical nature of the system would be, making technical recommendations as to vehicles, track, station design and dispatching systems.

• **Plan is completed.** As presently drawn up, the plan calls for a double track route 25 miles in length, with three branches to the west of the downtown district and three to the east, radiating out to the edges of the city. Approximately 8 miles of the system are to be underground, and 26 stations would be built along the route, with distances of one mile between stations on the branches and 1,800 feet between stations in the core area.

Two bridges would cross the North Saskatchewan River, which runs through the city. One of the two is presently in existence and was originally designed to permit eventual inclusion of transit vehicles. The other — carrying both automobile and rapid transit traffic—fits in with the master plan for Edmonton transportation as a whole.

In figuring the passenger volume that the system should accommodate, the planners relied on both 1980 population projections and a traffic estimate that forecast a 75% diversion from private vehicles to rapid transit of persons working in the central business district.

A total of 138 transit vehicles would therefore be required to handle 31,000 passengers per hour during peak travel periods, with a rate of 17,000 PPH in one direction and 14,000 PPH in the other.

• **Ultimate capacity much higher.** Looking well beyond these figures, the ultimate saturation point of the system is 50,000 PPH, based on the maximum capacity that additional rolling stock and revised schedules can be expected to cope with.

Sufficient flexibility in off-peak service will accommodate increased traffic for special events such as civic functions, and athletic events in the downtown area, and not least, the extra traffic moving over the southwest branch to and from the University of Alberta.

In outlying areas the double-tracked right-of-way would be partly elevated and partly at surface grade, but where the six branch lines converge downtown, a twin-tube subway would be built. Three stations would be constructed here, and trains would move, for example, from the northwest branch into the C.B.D., discharge the bulk of their passengers, continue on to the southeast branch, and then reverse direction with a new passenger load. Each branch line is linked in this manner with an opposite branch, and all interchanges take place downtown.

Bus feeders

Coordination with bus feeder service and construction of parking lots at outlying stations are outside the scope of the engineering report, but both are mentioned as being under study by civic planners as a means of extending the usefulness of the transit network throughout the metropolitan area.

• **Technical specifications.** Before making technical recommendations,

Canadian Bechtel looked over some of the newer transit networks presently in existence or in the talking stage, among them monorail, "monobeam," and the rubber-tired vehicle system now in use on the Paris Metro. But they remained convinced of the greater utility and flexibility of the bottom-supported steel wheel on steel rail concept, and recommended its adoption.

The cars themselves would be identical, electrically self-propelled units with 2 four-wheel trucks, and control consoles at both ends. They would therefore be adaptable to front-end, follower, and single-unit service—this last a possibility on branches with low off-peak period travel.

Each car is to measure 72 feet over coupler faces, weigh approximately 56,000 pounds empty, and accommodate 80 seated passengers in 20-inch wide seats. Automatic, evenly distributed heat and ventilation will provide 40 complete air changes hourly. Three remotely controlled doors on each side of the car insure easy movement to and from station platforms, which will be of the center island type in the downtown subway, and have wind barriers and heated waiting rooms at surface stations.

The average speed contemplated is 32 mph, with 50 mph the maximum, calculating on a 5 minute headway between trains and a 504-foot maximum train length.

A single operator performs normal running and door control functions. The apparatus for propelling, protecting and supervising the trains features a cab signal and automatic speed control system, an automated centralized dispatching system, and a propulsion and braking system supplied with direct current energy from a third rail fed by rectifier substations located at intervals along the routes.

The system would use 100-pound continuous welded rail. Grades would be kept down to 3% (compensated at curves).

A 7-car-set is the maximum train length permitted by this plan and the routes are to be double-tracked, so the terminal stations at either end of each route will have a total storage capacity of 28 cars. During off-peak periods of travel, cars will be held here, to be added as needed during rush hours. Additional storage capacity is planned at terminals of lines with unusually heavy traffic.

An important extra is that the system is to be designed so as to be suitable for conversion to automatic train operation, when the time comes. Edmonton's planners are being careful to make their rapid transit system as flexible as possible, so that the network can play a vital part in the city's growth for a long time to come.

How rail lines can handle rapid transit

An NYC engineer contends that, with changes in the signal system, rapid transit may be mixed with standard rail operations.

By William B. Garrison
Electronics Engineer, New York Central

It has been suggested that because existing railroad lines are unsuitable for rapid transit service, separate tracks and signaling must be provided for transit operations (RA, Aug. 20, 1962, p. 20). Mr. Garrison, an electronics engineer in the New York Central's signal department, contends that rapid transit may be provided on existing rail lines having excess capacity. He asserts that changes must be made in the signal system enabling it to provide safety and capacity for both types of service. As he illustrates, some track changes may be required.—Editor.

In spite of the large expenditures for urban highways in recent years, urban traffic congestion is still an unsolved problem. The dispersed pattern of urban growth based on auto transportation, plus increasing traffic congestion, has made a mass-transit solution based on traditional methods of surface transit virtually unworkable.

● **What's needed.** There exists a need for rapid-transit systems to link together the focal points of a modern community. Such a system must provide high schedule speeds and must be carefully integrated with existing surface operations and such new forms of distribution as are under development. It also must have adequate station parking facilities to encourage motorists to leave their cars.

The pattern of operation indicated is a clear departure from classical rapid transit having two or three stops per mile and a schedule speed of 20 to 25 miles per hour.

By virtue of their location, many railroad rights-of-way are well suited for the rapid-transit service just outlined. The use of an existing right-of-way for a new rapid-transit service offers four important advantages:

- Initial construction costs are reduced.
- Disruption to existing neighborhoods is reduced.
- Tax losses to the communities are reduced.
- The railroad achieves a more economical operation by selling or leasing its excess capacity.

There are two ways in which a railroad right-of-way may be used to provide rapid-transit service: (1) rearrange existing railroad facilities to provide for separate rapid-transit facilities within the railroad property lines; (2) operate the rapid-transit service on railroad tracks.

The first method presents no particularly serious problems. If space is not readily available for rapid-transit facilities, consideration can be given to streamlining the railroad plant by installing a traffic control system, by diverting traffic over an alternate route, or by closing or relocating railroad facilities that would interfere.

The second method introduces a number of important problems. If railroad and rapid-transit services are to be operated on the same plant, the design of that plant must reconcile the markedly different characteristics of the two types of service. Some of the elements to consider are:

- The railroad cannot be expected to alter drastically the pattern of operation of its long-distance trains to accommodate the requirements of a rapid-transit operation on a short segment of its line.
- Even though there may be a timetable schedule, the occurrence of a railroad train must be considered a random event.
- In some cases, the railroad may be able to alter its operation of switching and terminal moves to accommodate the peak-hour requirements of the rapid-transit service.
- Rapid-transit service requires a high degree of punctuality.
- The rapid-transit stations and cars must fit the loading gauge standards of the railroad.
- Provision should be made at station areas to permit the movement of wide shipments.
- The effect of grades and railroad crossings at grades.
- The signal system must be compatible with the railroad's standard practice.

To meet rapid-transit requirements,

the signal system must be designed to permit minimum train separation while maintaining adequate braking distance for railroad trains. With freight train braking distances at 60 miles per hour of the order of 7,000 feet (full service application on level track), a 5-aspect, 4-block signal system having 2,500-foot blocks is indicated. This block length would permit passenger-train operation over 80 miles per hour.

• **Dual signal system.** Signal indications based on railroad-train characteristics are more restrictive than necessary for rapid-transit operation. A 2,500-foot block provides ample braking distance for an 80-mph rapid-transit train. With this block length, it would be desirable to have rapid-transit trains operating with 3-aspect, 2-block signaling. This can be accomplished by setting up a dual system of signal indications, one for railroad trains and one for rapid-transit trains.

It is a basic requirement that each signal aspect have only one indication; otherwise, unsafe conditions can result. With railroad and rapid-transit services being operated by completely separate organizations, this condition is satisfied by the system outlined in the accompanying table, since within each organization, each aspect has a unique indication.

Indications of aspects calling for a speed reduction in preparation for a diverging move at an interlocking would remain the same for both operations. (Approach-medium, for example.) Train control, if used, would be the same type as the railroad used.

• **Rapid-transit headway.** With a basic signal system outlined, it is now possible to consider the rapid-transit headway that might be operated if freight trains are to be sandwiched in between rapid-transit trains. The signal system would force a freight train to regulate its speed so that it would follow a leader at approximately braking distance from the red signal protecting the leader. The worst case occurs with the leader just leaving a block, so that separation between the two trains is freight-train braking distance plus one block. Similarly, a rapid-transit train following the freight would be two blocks behind the freight. The total headway distance then is three blocks plus freight-train braking distance plus freight-train length plus one rapid-transit train length. This last length may be considered short compared with the other dimensions. The headway time is the headway distance divided by the schedule speed.

Workable headways

Workable rapid-transit headways become possible with schedule speeds above 30 mph. While mixing railroad and rapid-transit trains precludes the operation of 90-second headways, few cities require such a service. A five-minute headway at schedule speeds over 30 mph would adequately serve most middle-sized cities and less densely developed areas of large metropolitan centers. If the rapid-transit service can be given exclusive use of the tracks during rush hours, this signal layout would permit 90-second headways at 40 mph schedule speeds.

• **Additional considerations.** There are other problems to be considered besides a headway calculation. These are most easily visualized by means of a model track diagram. In this model, rapid-transit trains use a double track railroad between points A and J, a distance of 10.2 miles. Rapid-transit stations are located at A and J and at intermediate points as shown in an accompanying drawing. Pertinent railroad facilities are indicated. Station B is also a suburban stop used by railroad passenger trains. It is assumed that the rapid-transit line provides a 5-minute headway during a one-hour peak period and a 10-minute base service. A number of railroad trains occur at random during the peak hours. Trains operate under traffic control system rules with a block signal system. There is a 30-mph speed restriction for a distance of one-half mile just west of station E.

As a first step, a rapid-transit schedule was constructed. Since the primary purpose of this model is the study of conflicts between rapid-transit and railroad trains, a simplifying assumption of an average acceleration rate of 1 mph per second to 70 mph was made. A braking rate of 3 mph per second and 30-second station stops were assumed. This results in a running time of 18.6 minutes for the 10.2-mile distance and a schedule speed of 32.7 mph.

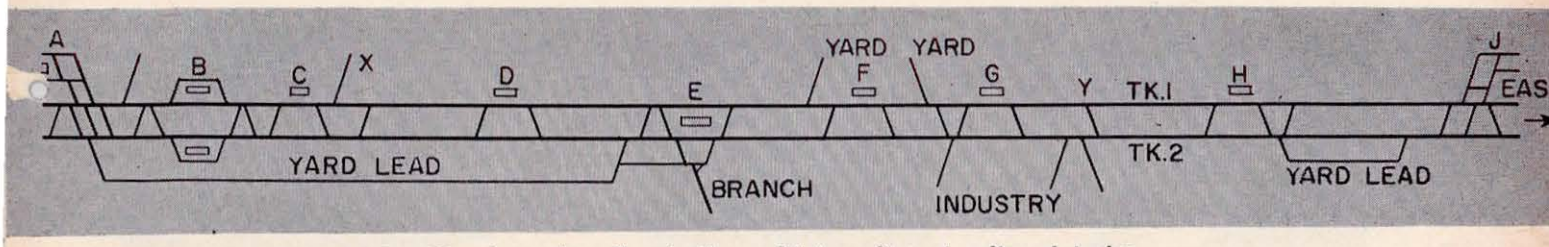
• **Wide-load clearance.** To leave one track clear for wide loads, a single station platform is located outside the tracks. This arrangement also reduces

AAR standard code and rapid transit signal indications

Rule	Aspect	Standard Code Indication	Rapid Transit Indication	Train Control Inductor (If used)
281	Green	Proceed	Proceed	Clear
281A	Green/Yellow	Proceed Approaching Second Signal at Medium Speed	Proceed	Acknowledge
282A	Yellow/Yellow	Proceed preparing to stop at Second Signal	Proceed	Acknowledge
285	Yellow	Proceed preparing to stop at Next Signal. Train exceeding Medium Speed must at once Reduce to that Speed.	Proceed preparing to stop at Next Signal. Train exceeding Medium Speed must at once Reduce to that Speed.	Acknowledge
291	Red*	Stop: Then Proceed at Restricted Speed	Stop: Then Proceed at Restricted Speed	Acknowledge
292	Red	Stop	Stop	Acknowledge

*Indication qualified by distinguishing marker.

be used to provide rapid-transit service



Double track line, 10.2 miles long, handles both rapid transit and railroad trains.

station costs as bridges or tunnels to the platform are eliminated. Leaving times of westbound rapid-transit trains were then adjusted to meet eastbound trains between stations. With this arrangement, opposing trains normally meet at station E.

Railroad trains added

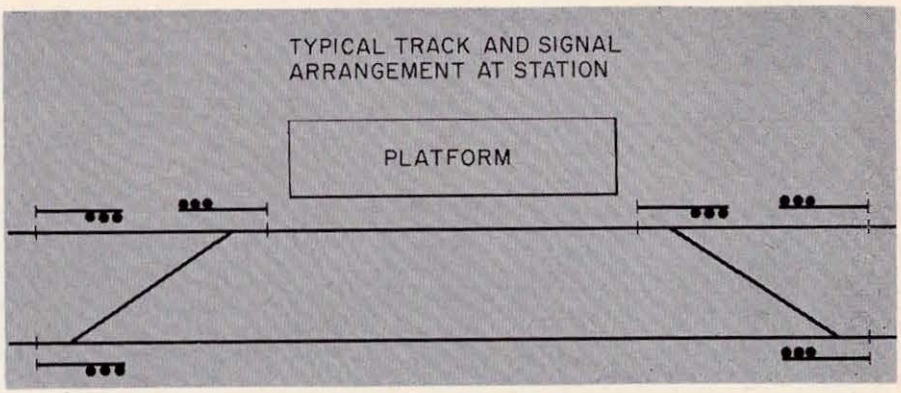
Several typical railroad trains were then added to the model. The freight trains are assumed to be one mile long and the passenger trains about 1,000 feet long. With the projected operation displayed on the model, the problem then is the design of a track layout that will resolve the conflicts among the various trains. The approach used is to provide a single interlocking at each station. The station track, however, is outside the interlocking limits. This arrangement results in a more economical signal design than having a separate interlocking at each end of the station while retaining the operating flexibility of two interlockings. Additional facilities were added to this basic arrangement where required.

● **Minimum delay.** Redispatching the operation on the proposed track layout indicates that in general the typical railroad trains took only 1-2 minutes longer to travel between A and J than when no rapid-transit trains were operated.

A switcher working the industries on track 2 between stations G and H will cause delay to rapid-transit trains. This can be eliminated by installing an interlocked crossover at Y. The need for this crossover can be determined by considering the frequency and the time of day at which this operation occurs. Similar remarks apply to crossover X.

Delays inevitable

When a high-density operation with trains having widely differing characteristics is proposed, train delays are inevitable. At the beginning of a study, some criteria should be established to gauge the performance of proposed plants. These would properly include a statistical analysis of expected delays.



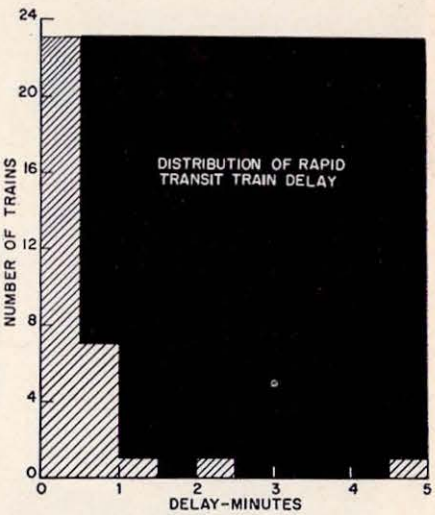
Station platform is outside interlocking limits.

While such a project is beyond the scope of this paper, the accompanying diagram shows a plot of the frequency distribution of the delays of the rapid-transit trains graphed in the model. A study of this distribution for a larger number of trains would permit the construction of realistic operating and equipment schedules and reasonable coordination with feeder schedules.

● **Role of drag freights.** The effect of drag freights on rush-hour operation is clearly shown. If they are operated frequently, it may be necessary to restrict them during rush hours. Rush-hour restrictions to trains that are powered to make at least rapid-transit schedule speed should not be necessary, unless they are of exceptional length.

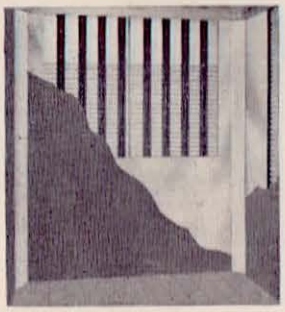
If some restrictions are placed on rapid-transit minimum headway, it is feasible to mix rapid transit and railroad traffic on the same plant. By constructing a model that takes into account all relevant operating conditions, it is possible to see the operating problems that occur, devise a plant to meet them, and to see the effect of that plant on the operation. An analysis of the operation in the model permits comparison of that operation with previously determined standards, and, once a design has been established, the construction of working schedules.

In short, there are areas where the excess capacity of railroad lines can be used to provide rapid-transit service.



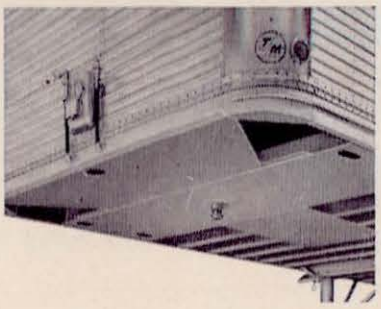
Frequency of transit delays.

The top diagram shows a typical rail line that might handle rapid-transit trains as well. To reduce delays to a minimum, however, it would be necessary to construct interlockings outside the station platforms where rapid-transit trains make stops. Although the mixing of rapid-transit and conventional railroad trains would incur delays to transit operations, the majority of such trains would be delayed only in the order of one minute.

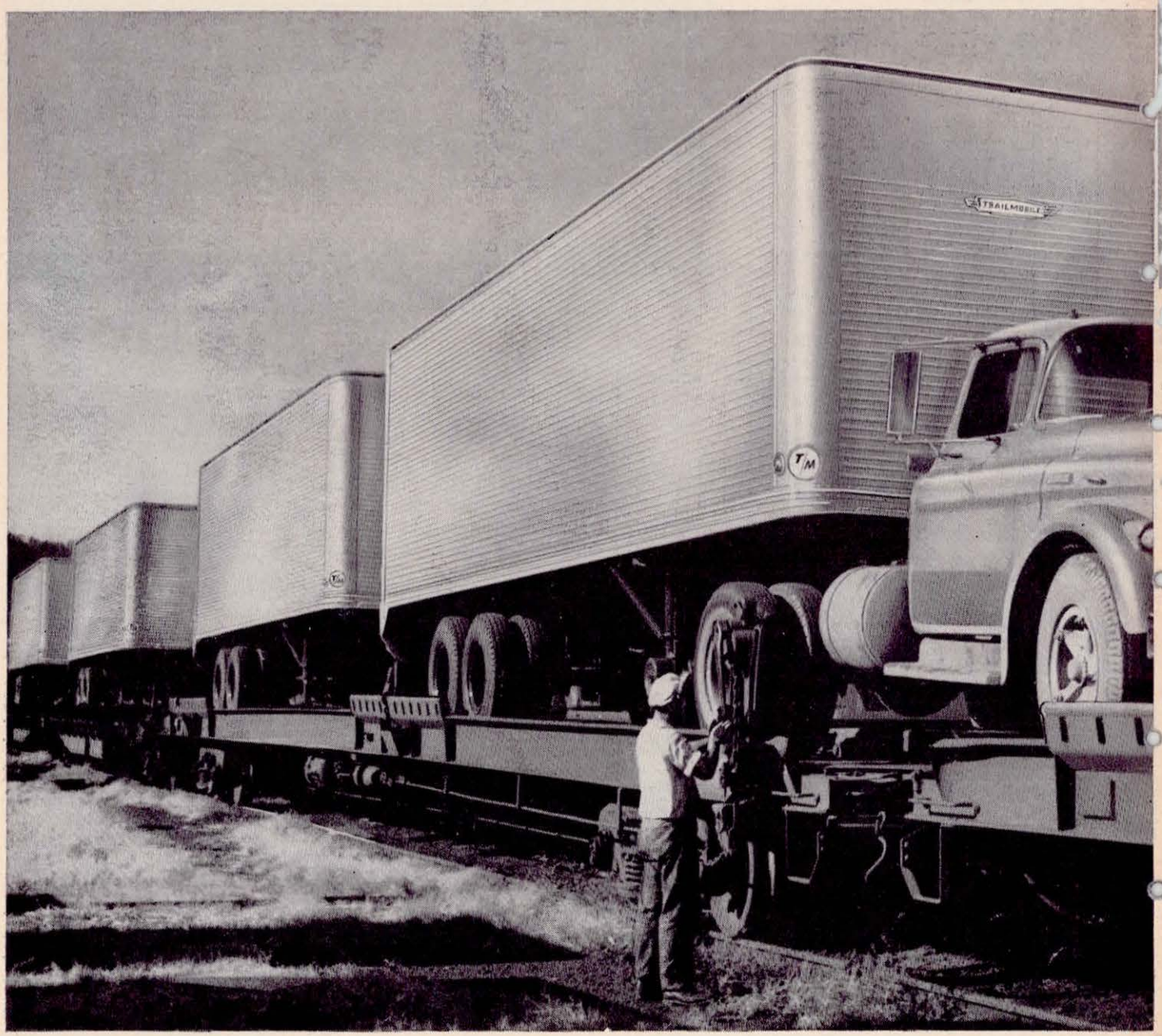


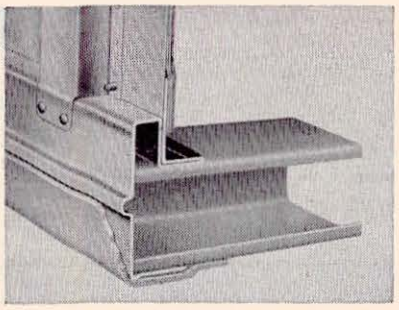
Extra strength up front!
Reinforced nose has four extra posts . . . an 18-gauge, high-tensile steel bulkhead and ¾" plywood lining to protect against damage from load shifting.

Extra strength at the rear!
One-piece plymetal doors with four locks guard against load shifting or other impacts encountered in railroad service.

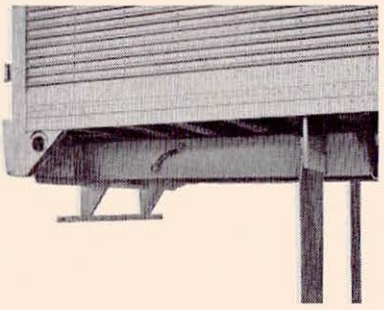


Extra strength in the coupling area!
A ¼" steel apron protects trailer bolsters from damage when flatcar stanchion is raised to anchor the kingpin.

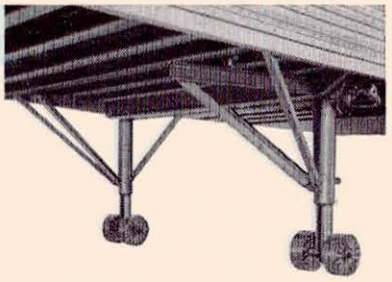




Extra strength in the frame!
Outer rail reinforcements permit the trailer to be safely lifted onto flatcars (by crane or travel lift).



Extra strength in the sub-frame!
Heavy-duty rail extensions give better floor support and provide a strong anchor for tie-down loops.



Extra strength at the prop!
Heavy-duty landing gear uses heavier gauge steel and has additional bracing from legs to floor bolsters.

These Trailmobile piggyback "extras"...

add extra profit to piggyback operation

In engineering trailers for piggyback service we like to put a little extra in—in terms of strength—so you can take a little extra out—in terms of profit!

The "extras" we introduce come in the form of a special package of piggyback features which were developed and proved in extensive piggyback testing—a package of **six special features** that provide **solid** protection in all areas of stress encountered in this kind of service. That's why you can count on Trailmobile piggyback trailers to protect your revenues against costly down-time and needless repairs . . . to return more while you use them . . . and more when you trade them.

Check with your nearby T/M representative for complete information or write to Trailmobile at Cincinnati for Piggyback folder #763-16.

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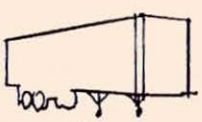
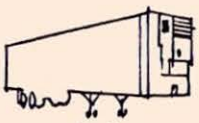
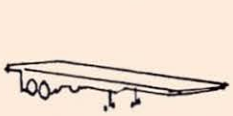
SALES, PARTS AND SERVICE IN ALL PRINCIPAL CITIES



Vans



Reefers

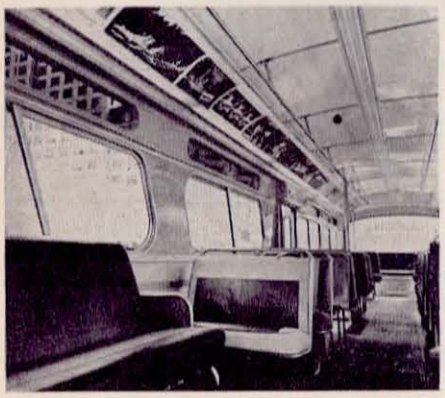


Flats

Containers

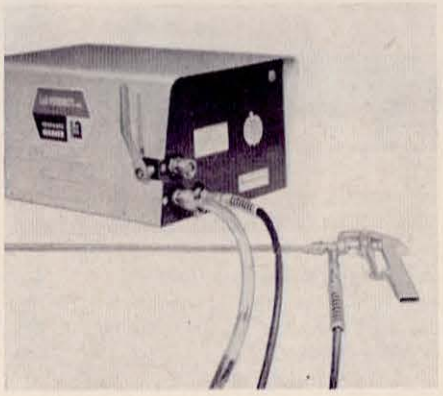
TR-1092

NEW PRODUCTS REPORT



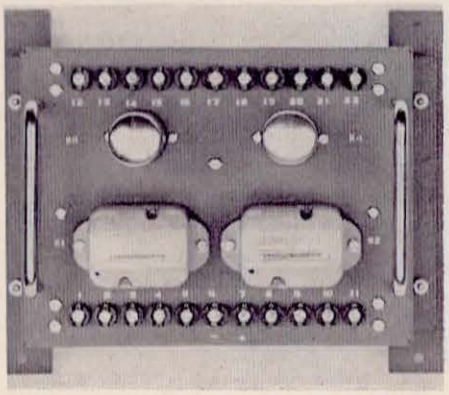
Lighting Fixture (RA-1)

Direct-indirect fluorescent lighting, with provisions for back-lighted full-color transparency plastic car cards, is combined in a new transit coach lighting fixture. The concave fixtures, fabricated of precision extruded plastic and aluminum, are mounted in a row along both sides of car in the curvature where side panel meets the ceiling. Standard lengths are 4 and 6 ft. Other lengths can be fabricated to order. *Luminator, Inc.*



Washer Unit (RA-2)

The Model 102 high-pressure washer develops a fine, 500-lb-per-sq in. spray for washing equipment; for washing passenger and freight loading areas, and for cleanup jobs around railroad installations without the need for scrubbing. No air is needed; it develops its own pressure. The one-man-operated unit has two inlets, each using 2 gallons per min. One draws hot or cold water from tap or tank; the other draws cleaning materials. *L&A Products, Inc.*



Directional Relay (RA-3)

The Servomatic directional relay enables accurate determination of train direction over the speed range of 2 to 100 mph. Two relay contacts are actuated when the train moves in the desired direction. No operation occurs when the train moves in the opposite direction. No power is required in the standby condition. This unit has been used in low-speed industrial switching areas by the Milwaukee Road. *Servo Corp. of America.*

Diesel Fuel Additive (RA-4)

Vitasul, a dual-purpose diesel fuel additive, is said to eliminate diesel exhaust odor and neutralize irritant particles to eyes, nose, throat and lungs. Performance tests have shown the additive combats the harmful sulphur residues of diesel fuels, keeping injectors clean and reducing and removing combustion chamber deposits. Fuel savings have been reported. The additive was developed in England. *Vitasul Industries, Inc.*

Car Shock Simulator (RA-5)

The Style No. 2-CIB cushioned mechanical impedance bar, for use with Incline Impact Testers, simulates shocks encountered in humping, switching and braking. Individual air cylinders are mounted at each side of the incline backstop and tied together by a reinforced structural steel cross bar. Air controls control amount of cushioning imparted to the striking dolly which, in turn, pulses the shock into the lading. *Gaynes Engineering Co.*

Shock Absorption Gear (RA-6)

The M-20 LadingGard combines mechanical and hydraulic shock absorption into one assembly which cushions shock between cars at speeds up to 12 mph. Heavy buffing impacts are cushioned through a hydraulic shock absorber coupled in series with a special friction draft gear. The unit, applicable to existing cars, has been tested in the Miner Research Complex and by the Western Pacific and found to meet standards for high-capacity gears. *W. H. Miner, Inc.*

RAILWAY AGE WEEKLY

30 Church Street, N.Y. 7, N.Y. READERS' SERVICE DEPT. (Att. George Johnson)

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12/2/63

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Market Outlook

Carloadings

Carloadings were not available as this issue went to press.

PIGGYBACK CARLOADINGS.—U. S. piggyback loadings for the week ended Nov. 16 totaled 15,690 cars, compared with 14,561 for the corresponding 1962 week. Loadings for 1963 up to Nov. 16 totaled 710,651 cars, compared with 628,959 for the corresponding period of 1962.

IN CANADA.—Carloadings for the seven-day period ended Nov. 7 totaled 78,511 cars, compared with 122,175 for the previous ten-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
Nov. 7, 1963	78,511	23,972
Nov. 7, 1962	65,862	22,627
Cumulative Totals		
Nov. 7, 1963	3,092,851	991,562
Nov. 7, 1962	3,067,810*	1,020,799*

*Revised

SP to buy equipment worth $90 million

Southern Pacific is headed into a $90-million year in its spending plans for motive power and rolling stock.

The totals: $34 million for 133 new diesel-electric and diesel-electric units (including 5000-hp units); $53 million for 2,799 new freight cars; and $3 million for 17 railway post office cars.

Last year SP spent about $80 million for 4,359 new cars and 40 locomotive units.

All major U.S. locomotive builders will share in SP's '64 program, as well as Krauss-Maffei in Germany. Most units will be in the 2,500-hp range, but some will go to 5,000 hp.

D. J. Russell, SP president, said purchase of the new diesels "is in line with the steady trend toward heavier loadings and faster train speeds."

SP freight car orders include: 100 85-ft auto-parts box cars; 10 flat cars equipped to transport missile motors, 900 wide-door box cars equipped with load protection devices, (all these cars equipped with Hydra-Cushion underframes); 300 flat cars, including 50 for piggyback service and 50 for auto-rack service; 500 mechanical refrigerator cars; 700 gondolas and 100 open-top hopper cars of 100-ton capacity; 125 covered-hopper cars of more than 4,000-cubic-foot capacity; and 64 cars described as "miscellaneous."

New Equipment

FREIGHT-TRAIN CARS

► *Atlantic Coast Line.*—Has ordered 90 100-ton covered hopper cars from Pullman-Standard with special interior linings for handling bulk food products; and 10 100-ton Tenelon steel covered hopper cars from Thrall. Total cost of the order is $1.5 million and deliveries begin in February.

► *Baltimore & Ohio.*—Will build 2,000 70-ton hopper cars, at a cost of $17 million, at its DuBois shops. Deliveries are expected to begin in January.

► *Frisco.*—Leased 500 70-ton open-top hopper cars from United States Railway Equipment.

► *New York Central.*—Ordered 94 100-ton box cars from Greenville Steel Car at a cost of $2.1 million. The cushion-underframe cars will have interior racks and bulkheads for handling of auto parts. Delivery will begin in December. The new order supplements an earlier NYC order for 85 similar cars (RA, June 24, p. 95).

► *Southern Pacific.*—Will order 2,799 freight cars at a cost of $53 million.

LOCOMOTIVES

► *Southern Pacific.*—Will purchase 133 locomotives during 1964 at a cost of approximately $34 million. Orders cover both diesel-electrics and diesel-hydraulics.

PASSENGER-TRAIN CARS

► *Southern Pacific.*—Will purchase 17 railway post office cars at a cost of more than $3 million.

► *Toronto Transit Commission.*—Has invited tenders for the construction of up to 248 subway cars for the Bloor-Danforth Subway. Delivery of up to 188 cars is required between May 3, 1965, and Dec. 17, 1965, and the remainder by July 31, 1966. Tenders must be submitted by Feb. 3, 1964.

FOREIGN

► *The Netherlands.*—Royal Netherlands Hoogovens and Steel Factories, Ltd., has accepted delivery of three 99-ton General Electric industrial diesel-electric locomotives.

New Facilities

► *Northern Pacific.*—Will install centralized traffic control on 36.5 miles of line between Gregory and Staples, Minn., at an estimated cost of $793,000; and connect Duluth, Minn., Livingston, Mont., and Lewistown, Idaho, to the road's dial telephone network and add Spokane and Paradise, Mont., to NP's dispatcher-to-train radio system at a cost of approximately $250,000.

PEOPLE IN THE NEWS

ATLANTIC COAST LINE.—**Jack E. Gordon,** general passenger agent, Tampa, Fla., named assistant passenger traffic manager there, succeeding **J. C. Hughey,** who retired Aug. 28.

C. E. Harper, Jr., appointed assistant director of labor relations, Jacksonville.

BESSEMER & LAKE ERIE.—**R. A. Ullery,** assistant to chief engineer, Greenville, Pa., appointed assistant chief engineer. **Mike Rougas** named engineer track, succeeding **V. M. Schwing,** appointed chief engineer of the **Union RR. J. B. Wackenhut,** construction and contract engineer, appointed assistant engineer. **J. L. McInturf,** engineering assistant, bridge and building department, named equipment engineer, Union RR. **C. W. Morrison,** assistant engineer, named roadmaster, succeeding **S. W. Sweet,** appointed engineer track, Union RR. **B. R. Forcier** appointed supervisor track, Albion, Pa., succeeding **S. D. Barnes,** appointed supervisor work equipment.

Charles G. Hoover, assistant traffic manager, retired Oct. 31, after 48 years of railroad service.

BURLINGTON.—**F. J. Dillon,** assistant to general auditor, Chicago, appointed director data processing and his former position abolished.

CANADIAN NATIONAL.—**J. D. Hayes,** manager, Lakehead Area, Port Arthur, Ont., appointed chief of transportation, system, Montreal, succeeding the late **J. H. Stevenson.**

CHICAGO & NORTH WESTERN.—**H. John Brugenhemke,** general agent, Green Bay, Wis., appointed assistant freight traffic manager, Chicago. **Harold A. Hoppe,** assistant general freight agent—coal rates, promoted to general freight agent—coal rates, Chicago. **Joseph J. Mullen,** northern sales manger, Minneapolis, appointed assistant general freight agent there. **Ervin G. Klover,** office manager to the freight traffic manager, Chicago, named division freight agent, Sioux City, Iowa, succeeding **Wayne A. Andersen,** recently promoted to division freight agent, Mankato, Minn. **Donald L. Gunvalson,** general agent, Rockford, Ill., appointed division freight agent there. **Robert A. Juneo,** district sales representative, Duluth, Minn., named division freight agent there. **Arthur E. Knight,** district sales agent, Mason City, Iowa, named division freight agent, Casper, Wyo., succeeding **John D. Boyles,** recently promoted to division freight agent, Cedar Rapids, Iowa. **Elmer A. Alexy,** district sales manager, Milwaukee, appointed general agent there. **Charlie Johnson,** division freight agent, Cedar Rapids, Iowa, appointed general agent, Tulsa, Okla., succeeding **James C. Helliker,** promoted to general agent, Houston, Tex. **Wilbur H. Strohsahl** and **Raymond C. Thompson** named assistant general agents, New York. Mr. Strohsahl was formerly district sales manager, New York, and Mr. Thompson was sales agent, Dallas, Tex.

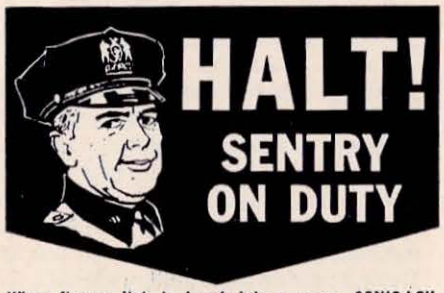
DEFENSE TRAFFIC MANAGEMENT SERVICE.—**Capt. Franklin Burkhead** named deputy regional commander, Eastern Traffic Region, Pittsburgh, Pa. Capt. Burkhead has been serving as officer in charge, Navy Ship's Store Office, West Coast Branch, Oakland, Calif. **Lt. Col. Thomas L. Harrigan,** deputy commander, U.S. Army Transportation Command, Japan, appointed chief, Freight Traffic Division, Eastern Traffic Region. **Lt. Commander Andrew J. Wasko** assigned as assistant chief, Traffic Services Division, transferring from the staff, Commander Service Force, U.S. Pacific Fleet, Pearl Harbor, Hawaii.

ERIE-LACKAWANNA.—**Alfred F. Gryceski,** assistant division engineer, New York division, Hoboken, N.J., promoted to division engineer, Buffalo division, Buffalo, N.Y., succeeding **Francis Martin,** who retired Nov. 1, account of ill health. **Wilson D. Slater** appointed assistant division engineer, Hoboken, succeeding Mr. Gryceski.

H. H. Clark appointed chief industrial engineer. Abolished position of manager of budgets and cost control.

FRISCO.—**N. A. Weaver,** assistant to vice president—operations, St. Louis, Mo., retired Nov. 30, after 35 years of service.

INTERSTATE COMMERCE COMMISSION. — **George W. Metzger** appointed chief, Section of Proceedings, Bureau of Finance, to fill the vacancy created by the appointment on Oct. 22 of former Section Chief **Thaddeus W. Forbes** as assistant director of the bureau. Mr. Metzger has served as attorney-adviser on the staff of Commissioner Kenneth H. Tuggle for the past three years.



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Market Outlook

Carloadings

Carloadings were not available as this issue went to press.

PIGGYBACK CARLOADINGS.—U. S. piggyback loadings for the week ended Nov. 16 totaled 15,690 cars, compared with 14,561 for the corresponding 1962 week. Loadings for 1963 up to Nov. 16 totaled 710,651 cars, compared with 628,959 for the corresponding period of 1962.

IN CANADA.—Carloadings for the seven-day period ended Nov. 7 totaled 78,511 cars, compared with 122,175 for the previous ten-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
Nov. 7, 1963	78,511	23,972
Nov. 7, 1962	65,862	22,627
Cumulative Totals		
Nov. 7, 1963	3,092,851	991,562
Nov. 7, 1962	3,067,810*	1,020,799*

*Revised

SP to buy equipment worth $90 million

Southern Pacific is headed into a $90-million year in its spending plans for motive power and rolling stock.

The totals: $34 million for 133 new diesel-electric and diesel-electric units (including 5000-hp units); $53 million for 2,799 new freight cars; and $3 million for 17 railway post office cars.

Last year SP spent about $80 million for 4,359 new cars and 40 locomotive units.

All major U.S. locomotive builders will share in SP's '64 program, as well as Krauss-Maffei in Germany. Most units will be in the 2,500-hp range, but some will go to 5,000 hp.

D. J. Russell, SP president, said purchase of the new diesels "is in line with the steady trend toward heavier loadings and faster train speeds."

SP freight car orders include: 100 85-ft auto-parts box cars; 10 flat cars equipped to transport missile motors, 900 wide-door box cars equipped with load protection devices, (all these cars equipped with Hydra-Cushion underframes); 300 flat cars, including 50 for piggyback service and 50 for auto-rack service; 500 mechanical refrigerator cars; 700 gondolas and 100 open-top hopper cars of 100-ton capacity; 125 covered-hopper cars of more than 4,000-cubic-foot capacity; and 64 cars described as "miscellaneous."

New Equipment

FREIGHT-TRAIN CARS

► *Atlantic Coast Line.*—Has ordered 90 100-ton covered hopper cars from Pullman-Standard with special interior linings for handling bulk food products; and 10 100-ton Tenelon steel covered hopper cars from Thrall. Total cost of the order is $1.5 million and deliveries begin in February.

► *Baltimore & Ohio.*—Will build 2,000 70-ton hopper cars, at a cost of $17 million, at its DuBois shops. Deliveries are expected to begin in January.

► *Frisco.*—Leased 500 70-ton open-top hopper cars from United States Railway Equipment.

► *New York Central.*—Ordered 94 100-ton box cars from Greenville Steel Car at a cost of $2.1 million. The cushion-underframe cars will have interior racks and bulkheads for handling of auto parts. Delivery will begin in December. The new order supplements an earlier NYC order for 85 similar cars (RA, June 24, p. 95).

► *Southern Pacific.*—Will order 2,799 freight cars at a cost of $53 million.

LOCOMOTIVES

► *Southern Pacific.*—Will purchase 133 locomotives during 1964 at a cost of approximately $34 million. Orders cover both diesel-electrics and diesel-hydraulics.

PASSENGER-TRAIN CARS

► *Southern Pacific.*—Will purchase 17 railway post office cars at a cost of more than $3 million.

► *Toronto Transit Commission.*—Has invited tenders for the construction of up to 248 subway cars for the Bloor-Danforth Subway. Delivery of up to 188 cars is required between May 3, 1965, and Dec. 17, 1965, and the remainder by July 31, 1966. Tenders must be submitted by Feb. 3, 1964.

FOREIGN

► *The Netherlands.*—Royal Netherlands Hoogovens and Steel Factories, Ltd., has accepted delivery of three 99-ton General Electric industrial diesel-electric locomotives.

New Facilities

► *Northern Pacific.*—Will install centralized traffic control on 36.5 miles of line between Gregory and Staples, Minn., at an estimated cost of $793,000; and connect Duluth, Minn., Livingston, Mont., and Lewistown, Idaho, to the road's dial telephone network and add Spokane and Paradise, Mont., to NP's dispatcher-to-train radio system at a cost of approximately $250,000.

Fast loading, unloading improves turnaround time

(*Continued from page 14*)

disassembled and examined for wear and other characteristics. We examine them part-by-part, bolt-by-bolt. We drop the Hydra-Cushion and examine its components. We put them back together and then test them again."

Asked about the major problems of the EELX program, Mr. Moorehead replies, "The doorway area needs side-filler work. Our engineering department is approaching this problem on a high-priority basis—and we'll have a solution soon. Performance and life, of course, are going to get our intense attention from now on."

Shippers using the cars, because they used palletized and unitized loads more often than not, required less time to load and unload the EELX cars, which led to improved turnaround time and number of loads handled per month.

One midwestern rail officer, looking at EELX loads per month, earnings per load and mileage, compared them very favorably with his road's performance with special cars as a group: "We only average about $200 per trip and about 1.23 trips per month," he notes. Another man sees an improvement in L&D performance. He cites a year-long study made by a major grocery chain that showed a two-thirds reduction in damage "on long-haul, plant-to-warehouse moves," and which "practically eliminated" L&D on customer shipments. He too, however, cites the same problems that cropped up in the EELX project: "Damage is still occurring principally in the center compartment due to poor loading practices. A great amount of this damage occurs as a result of the manufacturers' economizing on thin glass and thin tin packages. Additional damage results from the nails and sharp corners of the pallets. Pallets cause severe damage to bags and balers of thin wall construction."

• **Experiments continue.** The answers sought by the EELX project last year (and which Bob Byrne says Evans plans to continue seeking for "at least" another year of EELX operation) could be of immense importance to shippers, railroad and suppliers. With competition and transportation service of common carriers being increasingly geared to the requirements of new methods and technology in packaging, palletizing and unitizing, right answers could very well turn the tide in the rail-truck battle for traffic in favor of the railroads in the months ahead. Shippers feel they can cash in on the savings made possible by advanced handling methods—and also take advantage of the incentive rates for heavier loadings being offered by the rails.

• **Complicated search.** Lloyd G. Smiley, consulting management engineer, of Poughkeepsie, N.Y., notes that an experience of uneven results across the country as shippers have "installed palletized shipping," further complicates the search after ultimate answers.

"We have encountered widely varying productivity rates in plants and warehouses," he says. "West Coast and Middle West productivity is higher than that of the East or South. Temperature extremes, time of day, organization tempo, union influence and adequacy of supervision all affect the end result. Time differences will vary according to the orderliness of the load with respect to placing of items, the number of items, damage, case sizes and weights and the workers' familiarity with the prescribed pallet patterns. Most of these factors are minimized or non-existant when merchandise is shipped and received by palletized means."

Palletized productivity

Mr. Smiley describes ordinary, non-palletized productivity ranges of "200 to 300 cases per man-hour or eight to twelve man-hours per carload." Actual shipper-receiver experience? "J. J. Foley, New England director of traffic for the Atlantic & Pacific Tea Co. found from a randomly selected receiving report that it required 21 man-hours to unload 2,715 cases of mixed food products from a box car, an average of 130 cases an hour." Further, "in March, at the Acme Stores warehouse in Philadelphia, under the auspices of the National Association of Food Chains, there was demonstrated before 170 management men from food-chain operators the unloading of 6,800 cases of Jell-O, weighing 71,000 pounds, in 55 minutes." The time required for unloading the same merchandise under "ordinary deadpiled circumstances" would have been, "according to Jim Naile, Acme's general traffic manager, 26 man-hours." Mr. Smiley's conclusion: "Once products are palletized, all loads exhibit dramatic and impressive improvement. It seldom takes more than two hours to unload a 50-foot, special car like the EELX car when the load is palletized."

• **Shipper reaction.** Other experience tends to support the fact that shippers will see, and want, the savings possible—and be pressing for the kind of cars used in the EELX project. Impact tests made by Southern Pacific early this year of four cars with identical loads of canned goods strongly supported the results of the EELX performances. SP used a standard draft gear car; a car with cushion underframe, loaded solid without interior cross-bar equipment; another car with cushion underframe with the lading divided into five units by use of interior cross-bar equipment; and an experimental car with moveable endwalls supported by inflatable dunnage at each end.

At speeds of 10.71 mph, the standard cars lading was showing "heavy damage," according to SP's manager of specialized operations, T. A. Fante, while the car equipped closest to the EELX car—the car with cushion underframe and load dividers—was impacted at 15 mph and showed no damage to the lading. "Impact recorders," notes Mr. Fante, "showed only impacts of 3¼ to 3¾ mph reaching the interior of the car. Cans were still loose in cases. There was no indication of any rim dents or other types of damage." The car with inflatable dunnage came out third best in the tests.

• **How to beat L&D.** Results of the EELX cars' first year on the road tend to support what many railroad men and shippers have known for a long time—that technological conquest of the $123-million annual L&D problem is possible. But cost is high in the view of many railroad officers—even though thousands of such cars are showing up on equipments rosters of railroads around the country. Now, however, with the pressures that are being felt from new directions, the EELX experience may provide data for re-evaluation of the whole problem. The economies that are opening up for shippers from higher available cube and incentive rates, in handling economies from palletizing and unitizing freight may very well prove to be stronger incentives for solution of the L&D problem than the actual loss in money itself. From the railroad point of view, while conquest of the L&D problem would represent a substantial amount of money, there is a new aspect to the situation that may trigger more and more decisions for EELX-type cars: the fancy cars are proving they can get traffic off the highways and back on the railroad. "If these cars prove they provide irresistible cash savings to traffic managers," notes one traffic man, "and start diverting substantial chunks of business away from the highway and back to us, they may very well wind up being the 'standard' car for many kinds of traffic on railroads."

Firemen: down but not out

(*Continued from page 10*)

of train-communication equipment, the presence or absence of a fireman on the engine, the number of cars in passenger trains and the length of freight trains involved, the amount and nature of work performed en route, the amount and nature of work assigned to yard crews involved.

Here the attrition basis would be applied, except as to employees furloughed as of the effective date of the award. Thus, no jobs marked for elimination could be abolishesd until the employees involved were "retired, discharged for cause, or otherwise removed from the carrier's active working lists by natural attrition." There is a proviso which stipulates, however, that "no such 'protected employee' shall have any right to jobs that the carrier may discontinue pursuant to provisions of this award if other employment in any such class of service, for which such employee is qualified, is available to him in his seniority district."

The arbitration award spells out its provisions in considerable detail, occupying 20 mimeographed sheets, double-spaced. There was a 58-page supporting opinion by the board's public members, or "neutral members," as they call themselves. The Gilbert and McDonald dissents were statements of 32 and seven pages, respectively. The statement of the carrier representatives was two pages.

The opinion of the neutral members highlighted the history of the four-year-old dispute which got underway Nov. 2, 1959, when the carriers served the involved rules-change notices. Then, in turn, came the Presidential Railroad Commission which made a report assailed by its labor members, and the Emergency Board headed by Judge Samuel I. Rosenman, which made a report, also rejected by labor, after it had failed to mediate a settlement. The compulsory-arbitration legislation was a last resort of the late President Kennedy and Congress in their determination to prevent a nationwide strike.

● **Basis for award.** The arbitration board held 29 days of hearings and received testimony of more than 40 witnesses. The witnesses produced about 5,000 pages of transcript and more than 200 exhibits. The general approach of the board was to seek guidance from "tentative agreements" reached by the parties in thier unsuccessful bargaining. The law called for that approach, although the carriers took the position that there were no "tentative agreements' because unaccepted settlement offers should not be given such status.

The dissents of Mr. Gilbert and Mr. McDonald complained that the board failed to observe this requirement of the law. They listed what they considered areas of agreement which the board should have incorporated in the award.

In their brief statement, Mr. Wolfe and Mr. Knight said they were impresed with the "extraordinary ability" of the board's public members, and with the "care and diligence which they have shown in their effort to make a fair and just award." To the extent that the award "might be claimed to be dificient in these respects, this is not due to any lack of effort or fairness on the part of the neutral members, but must be attributed to the complexity of the subject matter and the time limitations imposed by the statute," the statement added.

● **Too much emloyee protection?** Then came the carrier members' expression of their disappointment with "certain aspects" of the award's provisions. They explained: "We feel that the provisions affording protective provision and other transitional benefits for unneeded employees are unduly and unnecessarily burdensome upon the carriers, and provide benefits for the employees involved to which they are not justly entitled."

Messrs. Wolfe and Knight went on to point out that the carriers served their notices Nov. 2, 1959. They added that the unions "by refusing to bargain, by resort to groundless litigation, and by other devices have delayed disposition of the issues for more than four years." The carrier members were also "disappointed" with those provisions of the award which "preclude the elimination of many redundant positions in train crews used in main line road service."

Notwithstanding these disappointments, Messrs. Wolfe and Knight signed the award because it will eliminate "much of the unjustifiable waste of manpower and money resulting from the application of existing rules and practices." At the board's press conference, Mr. Gilbert said he had hoped for an award setting up arrangements which the unions could agree to continue after expiration of the two-year period provided in the law.

● **Secondary issues.** There was also talk at the press conference about the so-called secondary issues on which the law required the parties to continue collective bargaining. These issues include carrier demands for modification of the dual hourly-mileage basis of pay in train and engine service, for the right to establish interdivisional runs, for elimination of fine distinctions between road and yard work, and for relief from rules requiring assignment of engine, train or yard employees to motor cars and self-propelled machines.

The arbitration law provided that no change should be made in any present rules with respect to the foregoing until the expiration of 180 days after its enactment date, which was Aug. 28. That makes Feb. 24, 1964, the date on which the carriers would be free to make their proposals effective.

Mr. Wolfe said it will now be the goal of the railroads to promote harmonious relationships with the unions. He added that they will undertake, in that mood, to seek a settlement of these "secondary" issues.

Mr. Gilbert's response was an expression of hope that Mr. Wolfe "follows through to make good on this promise to negotiate."

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PEOPLE IN THE NEWS

ATLANTIC COAST LINE.—Jack E. Gordon, general passenger agent, Tampa, Fla., named assistant passenger traffic manager there, succeeding **J. C. Hughey,** who retired Aug. 28.

C. E. Harper, Jr., appointed assistant director of labor relations, Jacksonville.

BESSEMER & LAKE ERIE.—R. A. Ullery, assistant to chief engineer, Greenville, Pa., appointed assistant chief engineer. **Mike Rougas** named engineer track, succeeding **V. M. Schwing,** appointed chief engineer of the Union RR. **J. B. Wackenhut,** construction and contract engineer, appointed assistant engineer. **J. L. McInturf,** engineering assistant, bridge and building department, named equipment engineer, Union RR. **C. W. Morrison,** assistant engineer, named roadmaster, succeeding **S. W. Sweet,** appointed engineer track, Union RR. **B. R. Forcier** appointed supervisor track, Albion, Pa., succeeding **S. D. Barnes,** appointed supervisor work equipment.

Charles G. Hoover, assistant traffic manager, retired Oct. 31, after 48 years of railroad service.

BURLINGTON.—F. J. Dillon, assistant to general auditor, Chicago, appointed director data processing and his former position abolished.

CANADIAN NATIONAL.—J. D. Hayes, manager, Lakehead Area, Port Arthur, Ont., appointed chief of transportation, system, Montreal, succeeding the late **J. H. Stevenson.**

CHICAGO & NORTH WESTERN.—H. John Brugenhemke, general agent, Green Bay, Wis., appointed assistant freight traffic manager, Chicago. **Harold A. Hoppe,** assistant general freight agent—coal rates, promoted to general freight agent—coal rates, Chicago. **Joseph J. Mullen,** northern sales manger, Minneapolis, appointed assistant general freight agent there. **Ervin G. Klover,** office manager to the freight traffic manager, Chicago, named division freight agent, Sioux City, Iowa, succeeding **Wayne A. Andersen,** recently promoted to division freight agent, Mankato, Minn. **Donald L. Gunvalson,** general agent, Rockford, Ill., appointed division freight agent there. **Robert A. Juneo,** district sales representative, Duluth, Minn., named division freight agent there. **Arthur E. Knight,** district sales agent, Mason City, Iowa, named division freight agent, Casper, Wyo., succeeding **John D. Boyles,** recently promoted to division freight agent, Cedar Rapids, Iowa. **Elmer A. Alexy,** district sales manager, Milwaukee, appointed general agent there. **Charlie Johnson,** division freight agent, Cedar Rapids, Iowa, appointed general agent, Tulsa, Okla., succeeding **James C. Helliker,** promoted to general agent, Houston, Tex. **Wilbur H. Strohsahl** and **Raymond C. Thompson** named assistant general agents, New York. Mr. Strohsahl was formerly district sales manager, New York, and Mr. Thompson was sales agent, Dallas, Tex.

DEFENSE TRAFFIC MANAGEMENT SERVICE.—Capt. Franklin Burkhead named deputy regional commander, Eastern Traffic Region, Pittsburgh, Pa. Capt. Burkhead has been serving as officer in charge, Navy Ship's Store Office, West Coast Branch, Oakland, Calif. **Lt. Col. Thomas L. Harrigan,** deputy commander, U.S. Army Transportation Command, Japan, appointed chief, Freight Traffic Division, Eastern Traffic Region. **Lt. Commander Andrew J. Wasko** assigned as assistant chief, Traffic Services Division, transferring from the staff, Commander Service Force, U.S. Pacific Fleet, Pearl Harbor, Hawaii.

ERIE-LACKAWANNA.—Alfred F. Gryceski, assistant division engineer, New York division, Hoboken, N.J., promoted to division engineer, Buffalo division, Buffalo, N.Y., succeeding **Francis Martin,** who retired Nov. 1, account of ill health. **Wilson D. Slater** appointed assistant division engineer, Hoboken, succeeding Mr. Gryceski.

H. H. Clark appointed chief industrial engineer. Abolished position of manager of budgets and cost control.

FRISCO.—N. A. Weaver, assistant to vice president—operations, St. Louis, Mo., retired Nov. 30, after 35 years of service.

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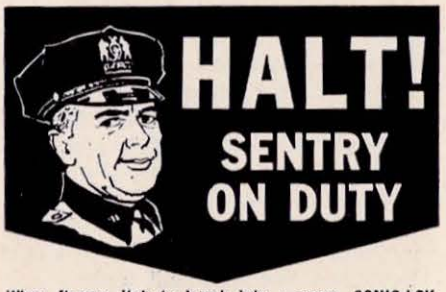

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LOUISVILLE & NASHVILLE.—**Richard A. Stanley,** Gulf Coast traffic manager, New Orleans, La., elected resident vice president, New Orleans and Gulf Coast area, effective Dec. 1.

H. L. Daniel appointed supervisor—special services, Chattanooga, Tenn., succeeding **J. C. Oaks,** promoted. Mr. Daniel will be responsible for all matters pertaining to proper car handling and effective utilization, complete and accurate car reporting and loss and damage prevention within the territory from Glencliff to Atlanta and branches.

NEW YORK CENTRAL.—**Norman M. Stone,** editor of the "Headlight," NYC employee magazine, has been named manager of publications and advertising.

READING.—**George M. Sassaman,** division sales manager, Harrisburg, Pa., appointed director of industrial development, Philadelphia. **Merrill G. Colflesh,** division sales manager, Reading, Pa., succeeds Mr. Sassaman. **Joseph P. Gavaghan, Jr.,** assistant division sales manager, Philadelphia, promoted to division sales manager, Reading. **James Cressman,** district sales representative, replaces Mr. Gavaghan.

T. J. Fitzpatrick, manager, motor carrier pricing, Philadelphia, appointed assistant manager, merchandise marketing and pricing, succeeding **R. G. Dunn,** appointed director of market research. **A. M. Weth** named manager, motor carrier pricing, succeeding Mr. Fitzpatrick.

SALT LAKE, GARFIELD & WESTERN.—**James E. Hogle** named president, Salt Lake City, Utah, succeeding **R. L. Firth.**

SOO LINE.—**Arthur C. Stenberg,** general freight traffic manager, Western Sales, Seattle, Wash., retired Dec. 1. **Kenneth H. Peterson,** freight traffic manager, Eastern Sales, Chicago, appointed general freight traffic manager there. **John B. Benson,** traffic manager, Minneapolis, Minn., named freight traffic manager, Seattle. **John Holloway,** traffic manager, Eastern Sales, appointed freight traffic manager, remaining at New York. **George A. Larson,** assistant to vice president—traffic, appointed traffic manager, Minneapolis. **Gordon A. Johnstone,** assistant traffic manager, New York, promoted to traffic manager there. **Mal A. Wigg,** general agent, Eau Claire, Wis., appointed assistant to vice president—traffic, Minneapolis. **G. G. Nightingale,** commercial agent, Prince George, B.C., appointed general agent, Eau Claire.

Supply Trade

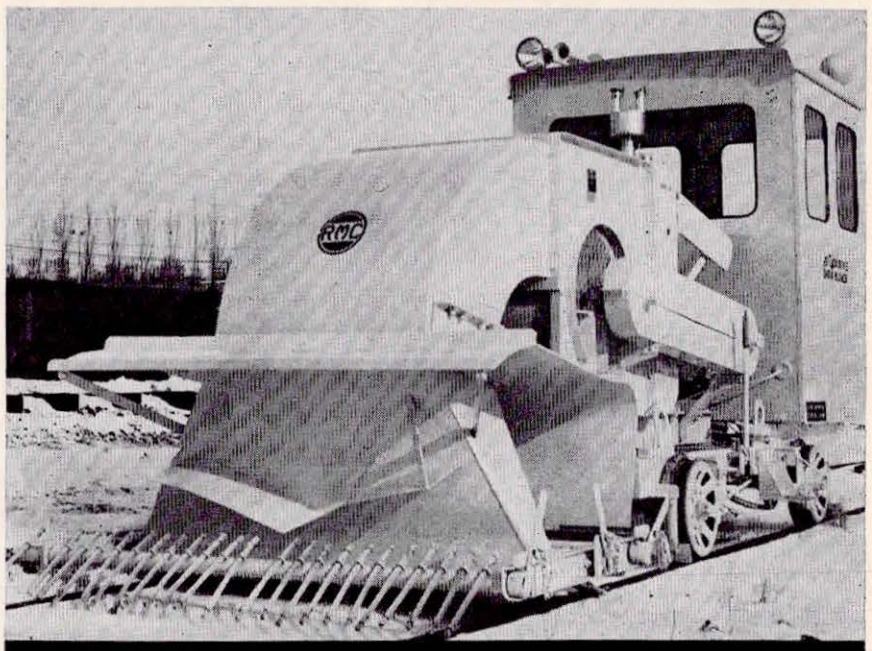
John F. Ducey, Jr., has been appointed product manager, wheels, Railroad Products Division, **American Brake Shoe Co.,** New York, succeeding **Daniel C. Poor,** who takes over Mr. Ducey's former position of manager of new products of that division.

OBITUARY

Arthur O. Plunkett, retired traffic manager, **Soo Line,** died Nov. 17, at New Milford, Conn.

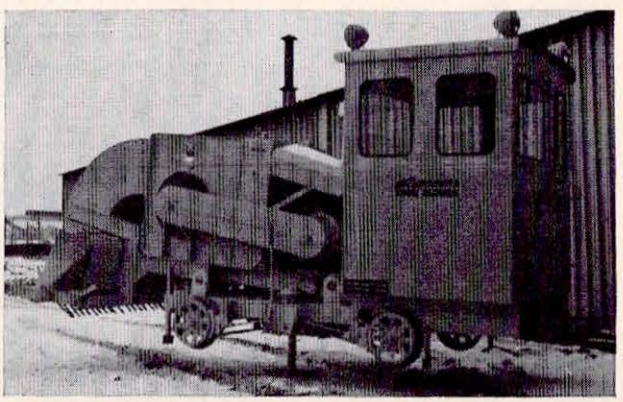
J. C. Wallace, 77, retired vice president—operation, **Nickel Plate,** died Nov. 12 at St. Vincent Charity Hospital, Cleveland.

RMC **Typhoon**
SNOW BLOWER



clears track fast

A *Typhoon* for low-cost snow removal! 165 mph air blast clears switches easily—blowing track and switches clean to frozen ballast. Shown here in the self-propelled model with heated cab, the *Typhoon* also is available in wheel-mounted and skid-mounted models. Prices begin at $6,500. Also available from RMC—*Cyclone* Snow Blowers (115 mph air blast, priced from $4,510).



Typhoon Snow Blower raised on turntable for reversing directions.

LEADER TO PROGRESS RAILWAY PRODUCTS INSTITUTE MEMBER

RAILWAY MAINTENANCE CORPORATION
BOX 1888
PITTSBURGH, PA.

YOU OUGHT TO KNOW

Higher sales and earnings are reported by ACF Industries, Inc., for the first six months (ended Oct. 31) of its current fiscal year. Consolidated net earnings for the period were $5,491,000, or $1.88 per share, compared with earnings of $1.32 a share, for the corresponding 1962 period.

Mounting concern over gray-area transportation has led the Committee Against Unlawful Transportation to issue a revised edition of its booklet, "The Illegal For-Hire Trucking Problem." The booklet is available from CAUT, 1710 H St., N.W., Washington 6, D.C., for 10 cents per copy, up to 100 copies; and $8 per 100 for over 100 copies.

Heaviest grain movements from Prairie elevators in 35 years have been reported by Canadian National. Grain sales to the USSR and other overseas buyers, says CN, helped push October loadings to 20,578 cars, representing 41 million bushels. All-time CN record for grain movements was set in October 1928 when the carrier loaded 36,764 cars at Prairie elevators with some 58.8 milllion bushels. (Grain cars 28 years ago averaged 1,600 bushels per car; today's average is 2,000 bushels.)

Employee language course programs in French and English have been expanded on the Canadian National. Some 1,000 employees in bilingual areas are receiving free training during working hours in one of the two languages under the supervision of professional teachers. Professor Andre Rigault, director of the language laboratory at McGill University, has been retained as French consultant.

Soo Line's net income for the first 10 months of 1963 was $4,409,781, up sharply from the 1962 10-months figure of $3,471,202, reports President Leonard H. Murray.

The 1964 meeting of the National Transportation Institute will be held on Jan. 15 in New York City. A. L. Nickerson, Chairman of the Board of Socony-Mobil Oil Co., will serve as general chairman of the Institute, which is sponsored by the Transportation Association of America and some 30 national and regional groups. The program will focus on industry problems in an era of increasing technology and automation.

A $268,000 sub-contract for a transit truck design was awarded by San Francisco Bay Area Rapid Transit officials to LeTourneau-Westinghouse, a Westinghouse Air Brake subsidiary. The award follows a similar contract with Budd, and at least one more firm will be selected to submit designs for testing on a 4½-mile test track in Contra Costa County, Calif.

Railroads must take aggressive advantage of new technology to improve themselves or "fall victim to the competition," L. W. Menk, Frisco president, told members of the Western Railway Club at Chicago last week. "Greater customer orientation" in recent years has been a primary reason for railroad progress, he said, in citing the fact that railroads "have finally arrested the steady decline in their share of intercity freight and have held their own against competitors, showing no signs of further slippage in our share of the available traffic in either 1962 or so far in 1963. Specialized equipment, new marketing concepts, better car utilization "national instantaneous perpetual inventory, permitting skilled distribution of freight-car equipment," more "imagination and innovation" plus the "courage and skill to plow new ground" will meet railroad problems, said Mr. Menk, and enable the carriers to outcompete "others who took business away from us by outcompeting us just a few short years ago."

Top railroad management officials will participate in the 18th Railroad Management Institute sponsored by American University's School of Business Administration, Jan. 13-24 in Washington, D.C. Slated to appear are B&O President Jervis Langdon, Jr.; ACL President W. T. Rice; P&LE President John W. Barriger; Daniel P. Loomis, AAR President; Don Manion, American Short Line Railroad Association President; Howard Freas, ICC Commissioner; and other industry and labor leaders and government officials. Central theme of the Institute will be "Progress Through Coordinating Research and Management Policy."

The "bullish new attitude" of both railroad and supply executives was "the most significant phenomenon" of the recent American Railway Progress Exposition, says Robb W. James, vice president and general manager, Union Switch & Signal Division of Westinghouse Air Brake Co. In an address entitled, "Railroading 1970", Mr. James reviewed the Exposition for members of the Railway Club of Pittsburgh. His conclusion: The next decade will be "perhaps the most virile period that American railroading has ever known."

Canadian Pacific is considering abandoning between 850 and 2,500 miles of branch lines in western Canada, and not 8,500 miles as has been rumored, according to CP President N. R. Crump. Locations of the lines being considered for abandonment were not announced.

Avoiding the loss of public transportation is the true nature of the present transportation crisis, according to John C. Kohl, Assistant Administrator (Transportation), Housing and Home Finance Agency. Speaking in Pasadena at the Institute on the Crisis in Community Transportation of the Los Angeles State College of Applied Arts and Sciences, Mr. Kohl said that public transit's long decline "seems to have leveled off, and the industry is beginning to identify and attack its problems with new vigor and intelligence."

TORONTO TRANSIT COMMISSION

TENDERS FOR SUBWAY CARS FOR OPERATION IN THE BLOOR-DANFORTH SUBWAY

Sealed tenders, endorsed "Tenders for Subway Cars for Operation in the Bloor-Danforth Subway", will be received by the Toronto Transit Commission at its office, 1900 Yonge Street, Toronto, until four (4) o'clock P.M., Eastern Standard Time, on Monday, the 3rd day of February, 1964.

The work for which such tenders are invited consists of the construction and delivery of up to 248 Subway passenger motor cars for operation in trains of from two to six cars, as specified in the Contract Documents and Specifications. Delivery of up to 188 cars is required between May 3rd, 1965 and December 17th, 1965 and the remainder by July 31st, 1966.

All tenders must be made upon blank forms of tender as furnished by the Toronto Transit Commission and included in the Contract Documents, and shall be made in accordance with the provisions contained in said documents, and must be accompanied by a certified cheque, payable to the Commission, in the amount of $300,000.

The successful tenderer will be required to furnish, execute and deliver to the Commission a performance bond of 100% of the contract sum satisfactory to the Commission in the terms and within the time set out in the Contract Documents.

The Contract Documents, including specifications, are available to the tenderers at the Commission's Equipment Department office, 1138 Bathurst Street, Toronto, Ontario. A deposit of $100.00 is required for each set of Documents. This deposit is refundable on return of Contract Documents in good condition within 30 calendar days after opening of the tenders.

The opening of tenders will take place at the Commission's office, 1900 Yonge Street, (6th floor Conference Room), Toronto, at 9:30 A.M. on February 4th, 1964, at which time tendering contractors are invited to have a representative present.

The Commission reserves the right to reject any or all tenders.

H. E. Pettett,
General Secretary,
TORONTO TRANSIT COMMISSION

Toronto, Ontario.

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JFK's legacy to transport

An appropriate memorial to the late President would be the enactment of his far-sighted program for transportation equity.

The recommendations of the late President John F. Kennedy in his historic message to the Congress on transportation (April 5, 1962) are an integral and vital part of his legislative program. There is no discernible reason why the nation's new President, Lyndon Johnson, should aim otherwise than at their enactment.

President Kennedy was committed to the transportation legislation he recommended to the Congress. As our Walter Taft points out on page 10 in this issue, when the Kennedy transportation bills died with the expiration of the 87th Congress, the President had them reintroduced in the current Congress—and they are before that body now, very much alive.

It would be disastrous for the country if this program were allowed to languish. The chaotic conditions in transportation—and their adverse impact on the railroads in particular—have long been widely recognized. Commerce Secretary Sawyer reported these conditions, with suggested remedies, to President Truman in 1949.

In 1955, when conditions had further deteriorated, there came along the "Cabinet Committee Report" on transportation which President Eisenhower sent up to Capitol Hill—but without manifesting any deep personal interest in the suggested recommendations for remedial legislation. This report was helpful, however, in promoting enactment of the Transportation Act of 1958 (which, while useful, fell short of being an adequate remedy).

Meantime, conditions in transportation (especially on the railroads) continued to worsen. President Kennedy put several of his ablest advisers to work on the problem and, at length, this action of his culminated in the Presidential message on transportation of April 5, 1963. The message stands out as the most comprehensive (and comprehending) state paper on transportation policy in our history.

"Less federal regulation and subsidization," President Kennedy concluded, "is in the long run a prime prerequisite of a healthy intercity transportation network." And, in due course after making these general (and highly appropriate) observations, he came along with specific legislative proposals to give effect to his recommendations.

The projected legislation includes, most importantly, the so-called minimum rate bills—which would "deregulate" the rates on bulk and agricultural commodities. Other measures, less vigorously promoted so far, include proposals to levy user charges on government-owned transportation facilities (highways, waterways, air transport plant)—which would make these facilities more nearly self-supporting.

Most importantly, as far as the users of railroad service are concerned, the Kennedy proposals would diminish the arbitrary and one-sided advantages (as to subsidies and freedom from regulation) which are now enjoyed exclusively by patrons of highway, waterway and (to some degree) air transport, and not by patrons of railroad service.

Extensive hearings have been held on the minimum rate bills (in particular). Legislators are, by now, well informed as to their provisions and of the public interest in their enactment. Opposition has come, very largely, from the carriers now favored by present inequities and who, of course, would like to have them perpetuated. It is clearer and clearer all the time, however, that the price for continuing these inequities is a distorted and unduly expensive transportation system (taken as a whole).

Transportation and the 'Cold War'

Our country is in a life-and-death contest in productive efficiency with totalitarian and Communistic countries. The total cost of transportation is an integral part of the total cost of industrial production. Thus it is that, if the U.S.A. continues to encourage waste of scarce resources by inefficient transportation, we are risking losing the international contest in productive efficiency.

The late John Fitzgerald Kennedy was the first President who fully realized the serious and growing implications of the country's careless management of the government side of its transportation set-up. He was the first President to go into this rather complex situation in sufficient depth to understand adequately the causes of the malady and the remedial measures needed to restore healthy conditions.

We are confident that our new President has the perception and the patriotism to realize that the Kennedy Administration's program for transportation is one of the greatest legacies John F. Kennedy has left to his successor and to the American people. We believe that he will find his entourage and leaders in Congress are also fully aware of these things. So let's all get going to help them to complete the legislative job so well started—bearing in mind that a healthy transportation system is not a partisan issue.

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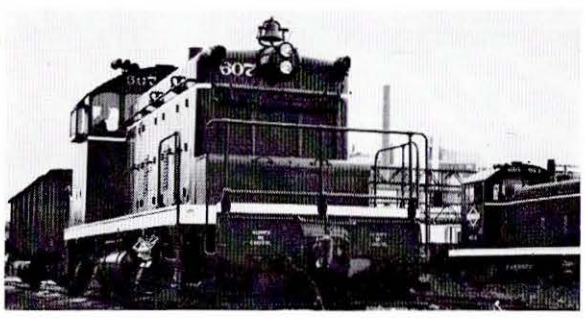

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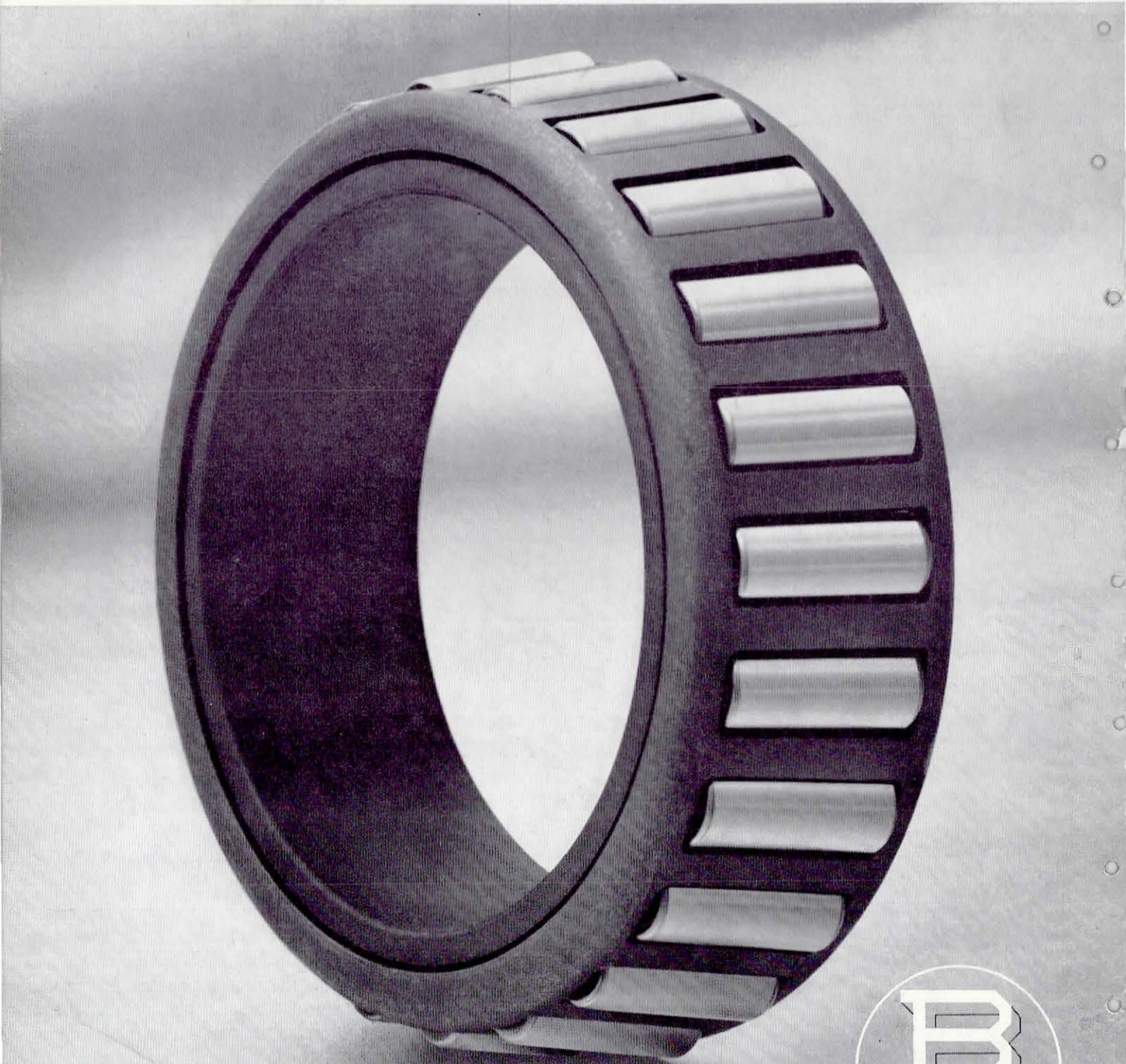

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